Strong Roots Climate Change Perception Report
- Views of Community Councillors in Wales

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Cover image source: http://www.ars.usda.gov/images/docs/7647_781. Introduction and Project Aims

1. Introduction and Project Aims

There are 736 community and town councils in Wales, representing the tier of government closest to the people. They cover approximately 94% of the land area and 70% of the population[1]. When considering climate change, it is at this level of local government where multiple global and local issues converge. The fact that little research has been devoted to community councils suggests that their potential has been overlooked and that opportunities may abound to exploit community council expertise for action on climate change. Community councils represent communities varying in size from villages with a few hundred residents to large towns with several thousand residents. They also vary in terms of level of authority, activity range and type and effectiveness of delivery (Pearce & Ellwood 2002, Edwards & Woods 2004).

The role of community councils is now being seen by some policymakers as playing a potentially critical role, especially with the devolution of greater responsibilities to local government.

The purpose of this report is to summarise the findings of a "Strong Roots" research project into local governance at community council level, particularly relating to climate change and sustainability initiatives in Wales. Strong Roots is a project that aims to increase the capacity of community and town councils to both lead and support sustainable development and to partner the Welsh Government in its commitment to the development of sustainable, resilient, low-carbon communities.

The following aims were used to inform project development:

a) Exploration of attitudes and perceptions of risk amongst community and town councils
b) Understanding the capacity of community and town councils to assess and respond to climate change risks
c) Identification and description of existing adaptation best practice in community-scale governance within Wales, the UK and the rest of the world; and best practice in behaviour change interventions to overcome barriers to action on climate change adaptation
d) Map provision of support for community and town councils to undertake climate change adaptation measures and identify gaps in provision.
e) Develop recommendations for further WG research and service delivery.

[1] http://www.onevoicewales.org.uk/allabout-councils Downloaded 28th February 2013.

2. Objectives

Key project activities focus on a desk based literature review, a questionnaire survey and analysis of results. Actions and timescales are outlined in Table 1.

Table 1. Project Actions and Timescales

Action	Responsibility	Deadline
Completion of literature review to advise project plan	Nick Nash	31st October, 2012
Identification of Volunteer Councillors in all parts of Wales	Paul Egan	31st October, 2012
Location of volunteers to be assessed and agreed	Jeanette Reis to agree with Paul Egan	24 September, 2012
Draft on-line survey produced with prior discussion at October Project Board Meeting	Nick Nash/ Lorraine Whitmarsh/ Jeanette Reis	16 November, 2012
Finalise survey for circulation	Lorraine Whitmarsh/Nick Nash	30 November, 2012
Deadline for Return of Survey/Create GIS Layer	Nick Nash/Eli Lazarus	11 January, 2013
Survey Analysis completed	Lorraine Whitmarsh/Nick Nash	31 January, 2013
Integration of Physical and Social Data to prepare perceptions and actual risks	Eli Lazarus	28 February, 2013
Telephone Interviews/Possible Focus Groups to be undertaken during February	Nick Nash/Lorraine Whitmarsh	28 February, 2013
Report Writeup	Lorraine Whitmarsh/ Jeanette Reis	29th March, 2013

3. Research Methodology

3.1 Desk Research

The desk-based research reviewed the available literature to establish a context for the questionnaire survey. The primary data source used was 'Web of Science', an academic citation index linked to multiple databases, cross-disciplinary research and subfields comprising a range of academic and scientific disciplines.

An initial literature search was conducted using combinations of terms including "climate change", "community council", "governance", 'risk', "behaviour change", "Wales", "UK", "adaptation", "community" and "provision". The aim was to find all available theoretical and empirical articles pertaining to community councils, risk and climate change in accordance with the aims of the project. A number of iterations were performed to ensure that as many relevant citations as possible were gathered in the initial literature sweep. Any articles judged to be similar by the database search engine to those yielded in search returns were also included. The primary citation list comprised over 700 references.

The next stage involved sifting through each citation, retaining or discarding references based principally upon the content within the abstract. The vast majority of articles were discarded as they were judged clearly not to contain any reference to community councils, risk or climate change. After sifting, less than 200 references were retained.

A second sift was subsequently performed after downloading electronic versions of all remaining articles. Attention focussed on the general content of each article rather than just the abstract. The final citation list contained less than 50 references, which were then summarised as a report. Section 4 summarises the results of the literature review (see Appendix B for full literature review results).

3.2 Survey of Community Councillors

An online questionnaire (using Qualtrics survey software) was then designed that picked up some of the key elements of the literature review. The full questionnaire can be found in Appendix A. These were electronically distributed to 350 community councillors across Wales during November 2012 through the One Voice Wales network. Reminders were sent in December and January and a final response rate of 63.71% (223 responses) was obtained.

The survey focussed on the following areas: respondents' values; issues facing the community; climate change knowledge, concern and beliefs, risk perception and adaptation; support and best practice for sustainability and tackling climate change.

Most questions have been used in previous research (e.g., Whitmarsh et al., 2011) to ensure their reliability, and to allow useful comparison of responses from this and other surveys. This includes the Climate Change Consortium of Wales (C3W) survey of the Welsh public conducted in December 2012 (Capstick et al., 2013).

Quantitative analysis was conducted in SPSS; and qualitative analysis in Excel, using thematic coding.

It is worth noting that the timing of the survey is likely to have had some influence on responses. In particular, the survey followed very severe flooding. Such contextual factors are an inevitable consideration in any public survey, but they should be born in mind while reading the results.

3.3 Mapping Analysis

Geographical Information System (GIS) analysis allowed for comparison of the perceptions of Welsh community councillors identified in the survey with scientific projections of local temperature, precipitation and sea level changes. Differences between responses and UKCP09[2] (please see Appendix C) projections were mapped using ArcView 10.

[2] http://ukclimateprojections.defra.gov.uk/ Downloaded 1st October 2012.

4. Background and Rationale

4.1 Desk Research: Key Findings

Despite the potential for wide-reaching community level governance, relatively little research has been conducted that moves beyond superficial commentary. In particular, it is notable that while a significant amount of research on the attitudes and perceptions of *communities* to environmental issues has been undertaken, there remains a gap in the literature on *local councillors'* conceptualisations of their role (Kambites 2010).

One of the few studies on the experiences and perceptions of community councillors was conducted in Devon and Cornwall (Borne 2008, 2009, 2010)[3] and made the following observations:

a) The requirements for education and training are diverse and imply specific skill sets for councillors to operate effectively within their parishes
b) Parish councillors feel that their skills are not always recognised and put to good use
c) '*There is an overwhelming feeling that there is a need to encourage sustainable communities 'but' there is confusion over the action that should be taken to achieve these goals*' (p.8)
d) '*Sustainable development is seen as an important concept but is not well understood. Greater understanding is needed of how these issues are integrated into the planning system with a particular reference to sustainable development mechanisms*' (p.9)
e) There exists a lack of awareness concerning mechanisms within local governance that could help create sustainable communities
f) The relationship between town and parish councils is viewed as important and should be strengthened
g) Councillors are concerned about global risks (e.g. global warming) on their communities but it was felt that more needed to be done to communicate these issues effectively
h) Additional education and training for parish councillors is needed.

Another study (Kambites 2010) investigates local town and community councillors' attitudes towards sustainability and their role as councillors in this context. Key conclusions are as follows:

a) Local councillors saw their communities as '*living organisms*', whose interests they represent with the benefit of local knowledge and holistic thinking
b) Councillors used this discourse to establish and justify their legitimacy as advocates of the community
c) This set up an antagonism between the perceived local knowledge and holistic thinking of community councillors on the one hand, and a lack of local knowledge and compartmentalised thinking on the part of higher level government on the other
d) The sense of legitimacy as community advocate made it difficult for community councillors to take a leadership role on broader concerns that may not be

[3] For Gregory Borne's website devoted to parish council issues and sustainability, though it appears to go to www.sustainableparish.com.

favoured by the community. This could lead to such issues being downplayed or neglected

e) An image of the parish as vulnerable organism served to divert attention away from broader sustainability-related issues. Even if councillors were enthusiastic about sustainability, they tended to prioritise the local over the global and the short-term over the long-term
f) Councillors emphasised local knowledge and a distrust of outside expertise.

Kambites argues that the perceptions of councillors could potentially obstruct sustainability initiatives. She concludes that community councils are in an ideal position to spearhead community initiatives on climate change provided the current sense of localism and short-termism can be challenged, in tandem with sympathy towards the sustainability agenda and the belief in its promotion as part of their role.

Other research suggests that the image of community councils held by other agents such as higher tiers of government or the communities they serve, may also function as an obstacle to progress (Anderson 2008). Community councillors' knowledge is also seen as different in ways that *devalue* it on the basis of a personalised and emotional connection to their community that affects their ability to make appropriate judgements. Those at the local level are reluctant to translate their values in accordance with the requirements of the system, which marginalises legitimate interests, values and knowledge. Meanwhile, higher government is frustrated by the inability of local interests to frame their arguments within the established epistemological boundaries. This leads to each council tier '*talking to the hand*' of the other.

Meanwhile, Demeritt & Langdon (2004) remark that the community tiers of government sometimes have problems understanding and assessing official sources of climate change information, resulting in responses that do not deliver the required actions at local level.

Environment Agency Wales also make the point that there is a trade-off for individuals between the time and resources required to act on flood risk and the outcomes of taking action. Community councils could also have a part to play in the collation of the following key factors linked to the above, which depend upon various forms of local knowledge:

a) The perceived likelihood of flooding.
b) The perceived ability to respond to the threat of flooding.
c) The perceived impact of flooding.
d) The willingness to take ownership of the risk.
e) The cohesiveness of the local community.

The results from the literature review were used to develop a questionnaire that was sent to community councillors in Wales in December 2012. The results of the survey are summarised in section 5.

4.2 Rationale: The Welsh Perspective

In addition to the research findings described in the literature, current policy initiatives and frameworks and established legislation at Welsh, UK and European level provide a context and an imperative for enabling and compelling community town councils to play an important role in climate change adaptation. These initiatives include:

- The powers in the Local Government Measure 2011 for promoting wellbeing have been extended to community and town councils. The Measure also establishes the possibility for this level of local government to receive direct grant support should Government Ministers choose to make it.

- The forthcoming Sustainable Development Bill will place a duty on public bodies to make sustainable development their core organising principle. Even if the final draft of the Bill delays or avoids implementing the duty in respect of community and town councils, the sector will nevertheless be operating in a framework of local government in which sustainable development will be the defining principle.

- The report to the Welsh Government by the Independent Advisory Group on the Welsh Planning Act contains two recommendations (52 and 53) regarding Community and Town Councils:
    - "52. The Welsh Government works with Planning Aid Wales and One Voice Wales to develop training programmes to enable town and community councils to understand and become involved in the planning system generally and in the LDP process in particular and to give them the skills and techniques to involve their communities in the planning process.
    - 53. The Welsh Government consults on the scope for town and community councils and other broad-based community organisations to prepare Supplementary Planning Guidance in accordance with the LDP for their areas or parts of their areas for submission to and adoption by the local planning authority following the statutory preparation process we recommend."

The concept of Community Led Local Development is central to EU structural funds and will be a compulsory requirement of rural development funding from 2014[4].

Taking these drivers and the findings of the literature review into consideration, we are able to present a conceptual framework for investigating and at a later date enabling the role of *community and town councils as key agents of change in respect of climate change adaptation.*

Community councils can act as trusted local brokers. They understand their communities as living organisms: they know the strengths and vulnerabilities of both the human and natural resources in the locality. They are generally trusted by the population; and, as we show in section 5, their views appear to be broadly reflective of those of their communities. If they consult regularly and effectively, this further strengthens the trust locally but also gives them the democratic mandate and evidence base to act as

[4] See: http://ec.europa.eu/regional_policy/conferences/od2012/doc/community_en.pdf

advocates in dealing with county level and national strategists and decision-makers. In order to fulfil this potential however, the councillors and clerks require training, information and other forms of support while their representatives at a national level (principally One Voice Wales but also WCVA and The Commissioner For Sustainable Futures) need to work with the WLGA, Welsh Government, Natural Resources Wales, and other bodies to ameliorate tensions and remove misconceptions between the sector and the other statutory bodies.

4.3 Best Practice

As we discuss in section 5, our survey indicates knowledge of best practice amongst councillors tends towards climate change mitigation rather than adaptation. Previous experience by the project team similarly suggests that examples of explicit adaptation measures undertaken by this sector are rare. One excellent example, however, is found in the county of Cardiff. Here the unitary authority has worked with six community councils to develop 'local resilience plans'. The driver for this was not the councils themselves but the risk management team within the unitary authority. It does, however, serve as an example of the integration referred to above and required by the concept of sustainability as a culture of the system-level integration of public agencies and services.

While our survey was being developed and implemented, colleagues were concluding research on behalf of the Welsh Government (led by AD Research & Analysis) into the provision of community level flood risk adaptation (Darnton et al., 2013). This has revealed a number of examples in which community councils have played a role in integrated flood risk management. For example:

- Usk Town Council has an independent flood plan that relies on the Environment Agency contacting named councillors who then contact flood wardens via a telephone cascade system. We also have a number of residents who have a very good local knowledge of the river and area who would contact the council should they have concerns.

- Llanddowror Community Council has an independent flood risk management plan developed with advice from the Environment Agency and Carmarthenshire County Council and endorsed by the community via public meetings. The council clerk is the flood plan co-ordinator.

- Beaumaris Town Council has developed a coastal flooding risk management plan with the Environment Agency.

- The Village of Rossett was severely flooded in 2001 when the river Alyn overflowed. As a result, a Flood Partnership was established comprising Wrexham County Borough Council, Environment Agency Wales and Rossett Community Council.

The project concluded that flood impacts and needs are unpredictable, dynamic and often contested. Therefore, locally specific, tailored and flexible responses are required (although certain general principles can be identified; see Box 1); as are collaboration and greater integration ('whole systems approach') between the various agencies with responsibility for flood, and affected communities whose capacities and expertise should

be utilised. The project team also recommended that a Flood Support Service for Wales (FSSW) be established which could help achieve these needs by joining up and supporting communities and delivery bodies (Darnton et al., 2013).

Box 1. Framework for flood support (Darnton et al., 2013)

Tasks:
T1. Identify & develop shared understanding of flood risk
T2. Identify & address differential vulnerabilities
T3. Identify existing capacities & resilience
T4. Emergency planning
T5. Planning for recovery
T6. Identify & enact flood risk management responses
T7. Emergency response
T8. Support recovery
T9. Assess, learn & improve (inc. build resilience & regenerate)

Themes:
x1. Working with those affected by flooding
x2. Building capacities & resilience
x3. Organisational aims, framing & approaches
x4. Taking a whole system approach
x5. Understanding psychological factors & behaviours
x6. Learning, change & improvement
x7. Joining up

5. Survey Results

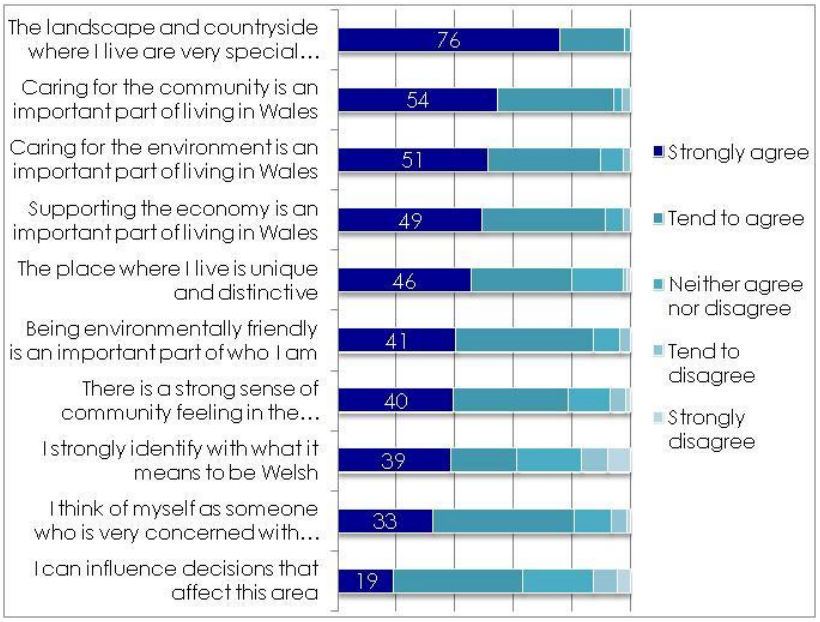
5.1 Sample Characteristics

Demographics of the sample are broadly representative of the community councilor population. The sample was 63% male and tended to be middle-aged or older (26-45:10%; 46-65: 52%; over 65: 37%) and generally well-educated (33% had an undergraduate degree; and a further 31% had a postgraduate degree).

Almost half the sample (47%) is willing to take part in further research.

Figure 1 shows responses to the attitude and value questions. This indicates that landscape is very important to respondents; and community, environment, economy are seen as almost equally important aspects of Welsh life.

Figure 1. Respondents' attitudes and values



5.2 Issues Facing the Community

Most respondents (N=149 in English; N=12 in Welsh) responded to the question 'What do you see as being the main issues or challenges facing your community over the coming year?' Table 2 shows a summary of the English responses (see Appendix D.1 for raw responses).

The most commonly identified issues were lack of, or cuts in local services and infrastructure, followed by inappropriate or over-development, flooding, traffic, unemployment and energy/fuel poverty.

The responses illustrate that councillors are concerned about cuts in funding and local service provision, in combination with rapid development (including those set out in Local Development Plans), which are seen to be threatening community cohesion, landscape and local character.

While flooding was amongst the most popular responses (N=29), climate change (N=7), extreme weather (N=11) and other impacts (e.g., sea-level rise, N=2; drought, N=1) were less common. Examples of flooding more often referred to blocked ditches/drains and residential development as causes of flooding, although some indicated changes in rainfall as a contributing factor.

Table 2. 'What do you see as being the main issues or challenges facing your community over the coming year?' (summary of English responses; N=149)

Local services and infrastructure (lack / cuts)	44	Wind farms	3
Inappropriate / over development	34	Erosion	3
Flooding / blocked drains	29	Community / sustainable energy generation	
Traffic / parking	22		
Unemployment (esp. youth)	22	Overpopulation	3
Energy / fuel prices / poverty	17	Resource depletion	2
Public transport	13	Sea-level rise	2
Community resilience / reliance / cohesion	13	Anti-social behaviour	2
Affordable / adequate housing	13	Immigration	2
Elderly care / ageing community	12	Welsh language	2
Extreme / poor weather	11	Severn Barrage	1
Reducing environmental / carbon impacts	11	Snow	1
Preserving heritage / landscape	11	Drought	1
Local economy / regeneration	10	Light pollution	1
Air pollution	8	Quarry blasting	1
Food prices /security / local food production	8	Inequality	1
Waste management / recycling	7	Property stagnation	1
Climate change	7	Nuclear power/waste	1
Water management / sewerage	6	International war / instability	1
Biodiversity / wildlife loss	6	Greenwash	1
Youth involvement / provision	4	Unruly community council	1
Loss of / risk to agriculture	4	Internet access	1
Littering / fouling	3	International development	1

Participants were then asked about environmental issues that may be important for their community. Consistent with the findings of the previous question, Figure 2 shows climate change is not the most important issue for Welsh communities, but concern about some associated impacts (e.g., flooding, storms) is high. Interestingly, littering scores much higher in response to this (closed) question that the previous (open) one.

Furthermore, many respondents indicated they have recently experienced these impacts of flooding and storms (see Figure 3).

Figure 2. 'How important are each of the following environmental issues for your community?'

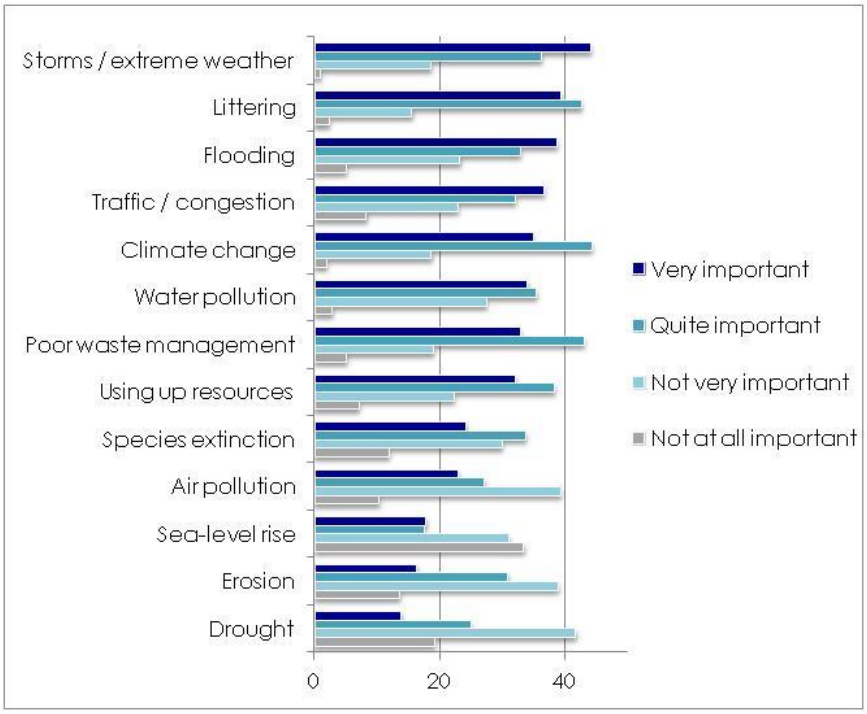
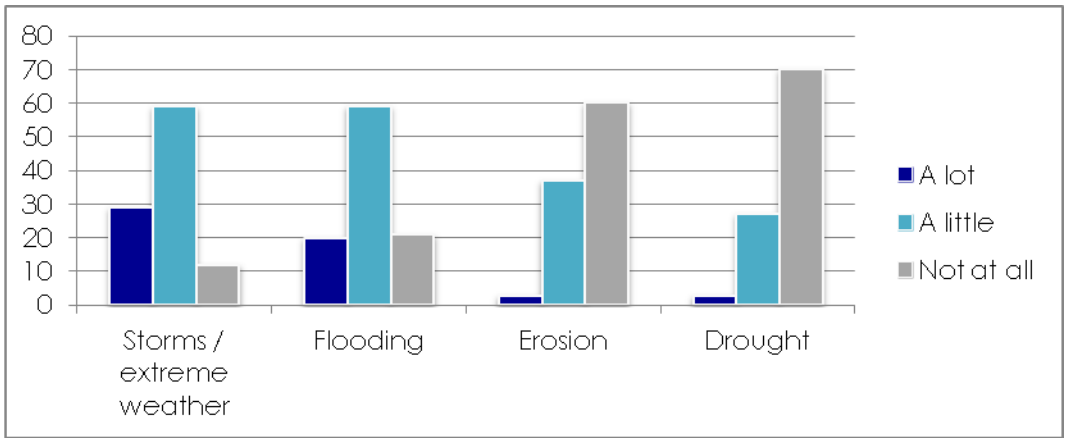


Figure 3. 'In the past three years, to what extent has your community been affected by…'



5.3 Climate Change Knowledge

Most respondents say they know 'a fair amount' about climate change (Figure 4); and most also accept there is a human influence on climate (Figure 5).

Most believe that by 2080 rainfall (Figure 6) and sea levels will increase (Figure 7), but there is less certainty about temperature change (Figure 8).

The most common estimate of temperature change by 2080 is 2 degrees; while estimates of rainfall change were most commonly +10% or +20%. Sea level was most commonly estimated to increase by 10cm.

Figure 4. 'How much would you say you personally know about climate change?'

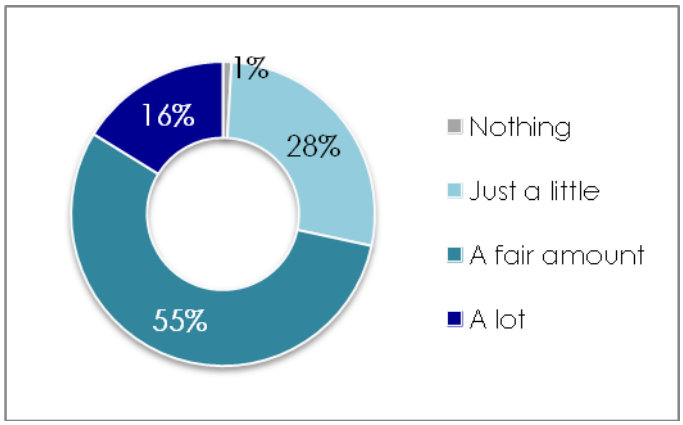


Figure 5. 'Thinking of the causes of climate change, which best describes your own opinion?'

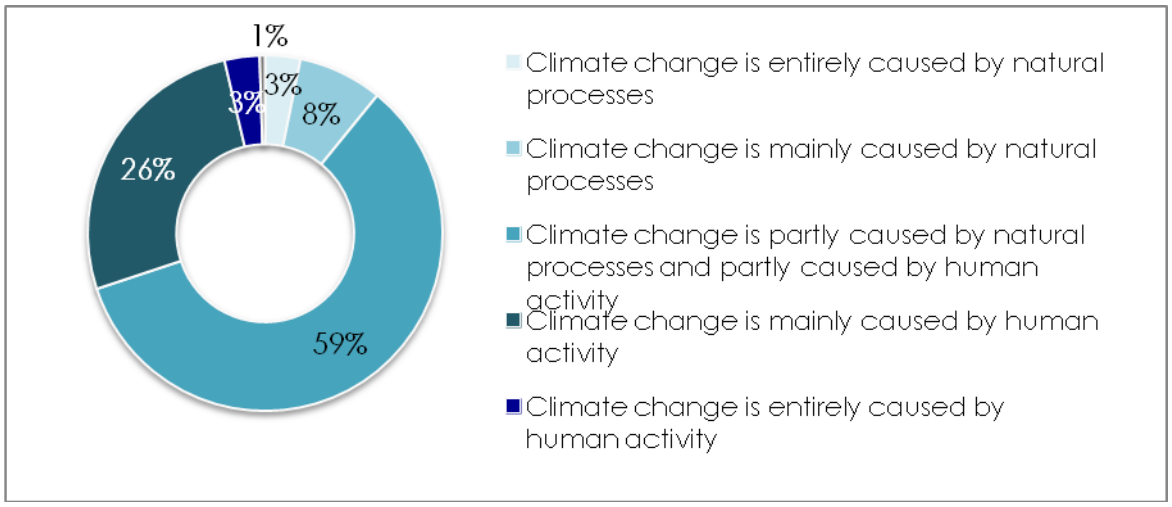


Figure 6. 'In your opinion, do you think annual rainfall in your area will increase, decrease or remain the same by 2080?'

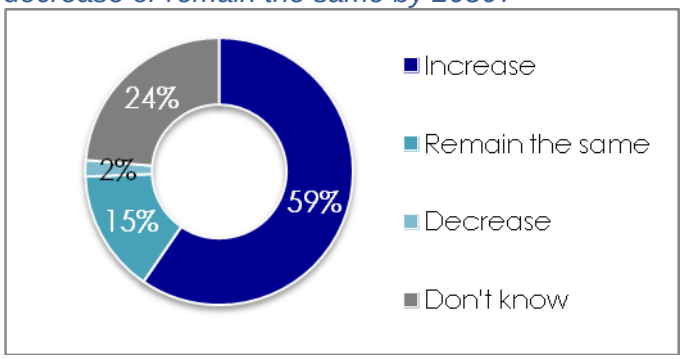


Figure 7. 'In your opinion, will local sea level increase, decrease or remain the same by 2080?'

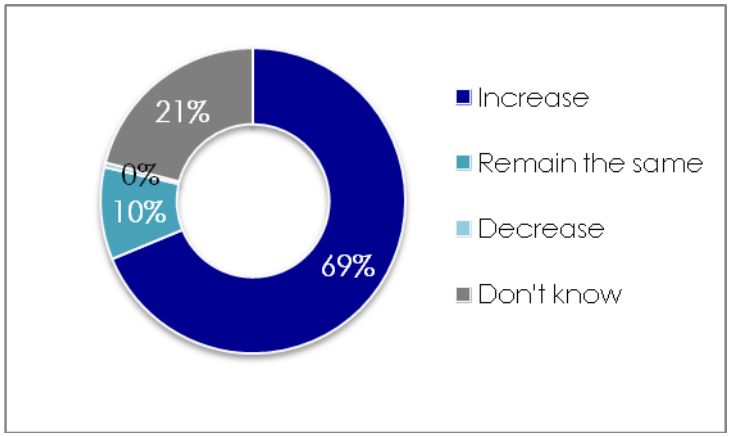
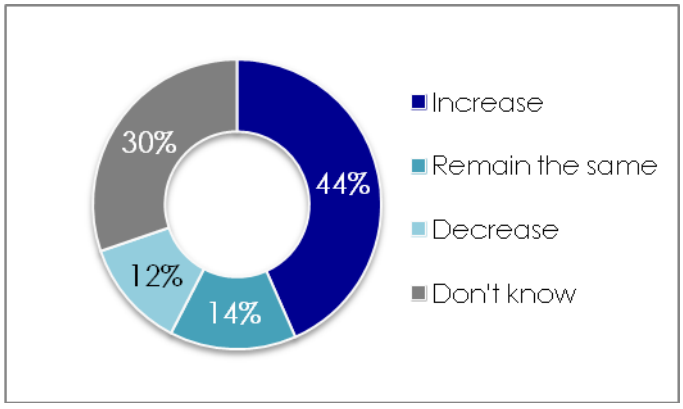


Figure 8. 'In your opinion, will summer temperatures in your area increase, decrease or remain the same by 2080?'



5.4 Climate Change Concern and Beliefs

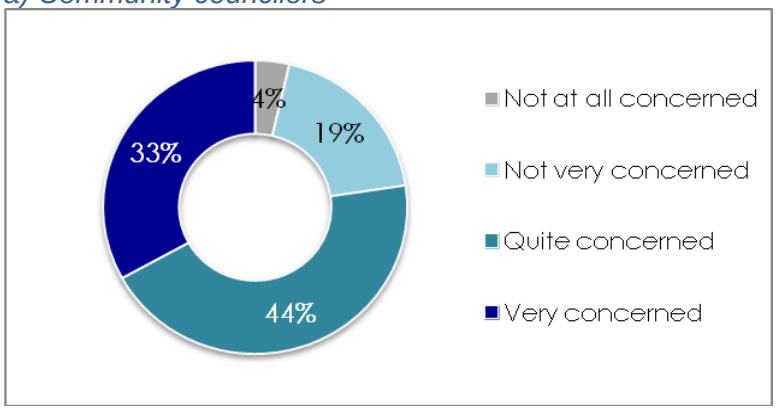
Most community councillor respondents (77%) are concerned about climate change, which is comparable to the 84% of the general public in Wales with the same view (see Figure 9).

As shown in Figure 10, Welsh flooding and sea level rise is linked to climate change, but fewer see drought as a risk. This is also consistent with findings of the concurrent public Welsh attitudes survey, which shows flooding a greater concern and perceived risk than water shortages or droughts (Capstick et al., 2013). In addition, few see opportunities (e.g. 14% see potential benefits for tourism, 31% see potential benefits for crops) emerging as a consequence of climate change. On a similarly negative note, trust in climate scientists is evidently not high and just 41% of respondents reported that they had some level of trust in scientists.

Despite this, over 70% of respondents believe that Wales is already feeling the effects of climate change impacts and consistent with previous research, it is reported that responsibility for tackling climate change should be located primarily with international communities (Figure 12).

Figure 9. 'How concerned, if at all, are you about climate change?'

a) Community councilors



b) Welsh public (C3W 2012 survey)

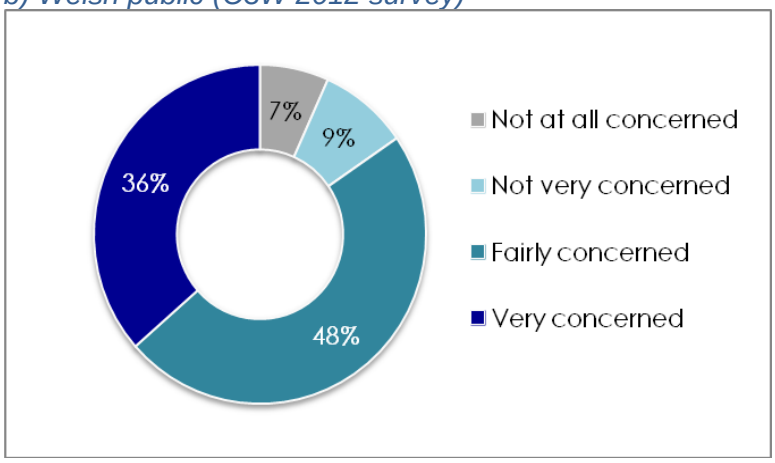


Figure 10. Attitudes to climate change

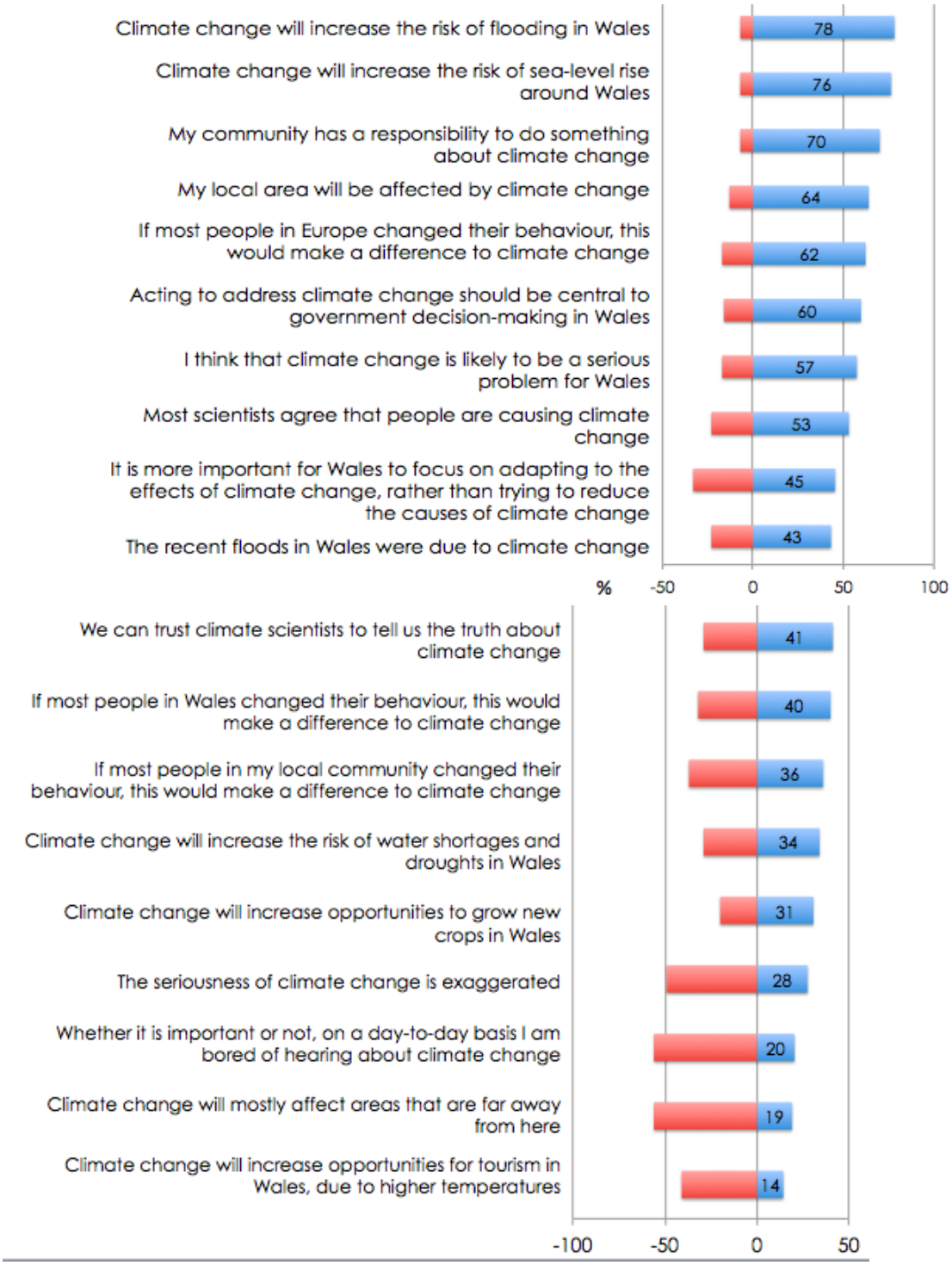


Figure 11. 'When, if at all, do you think Wales will start feeling the effects of climate change?'

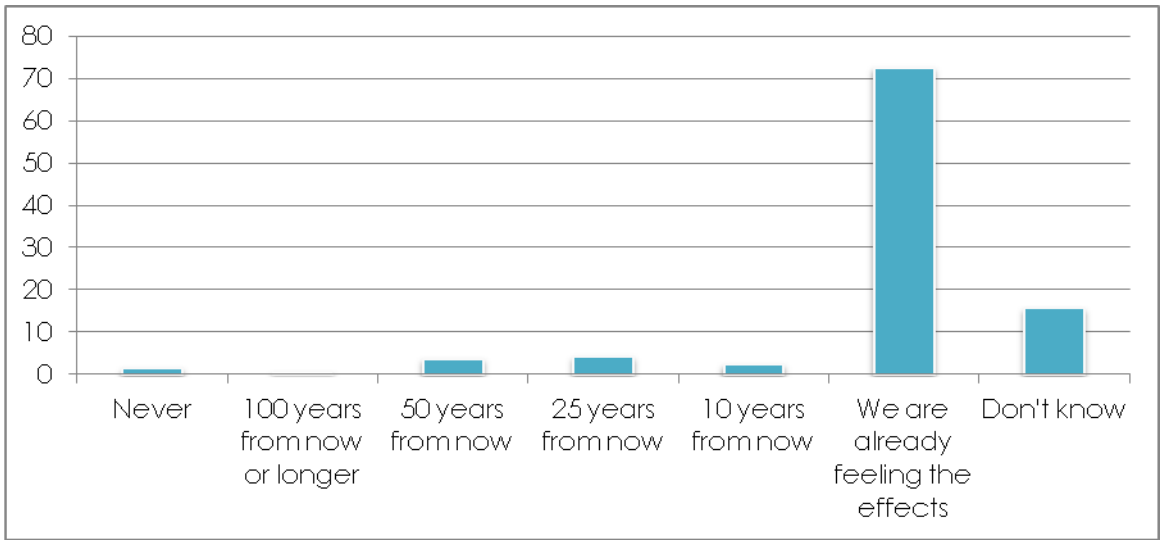
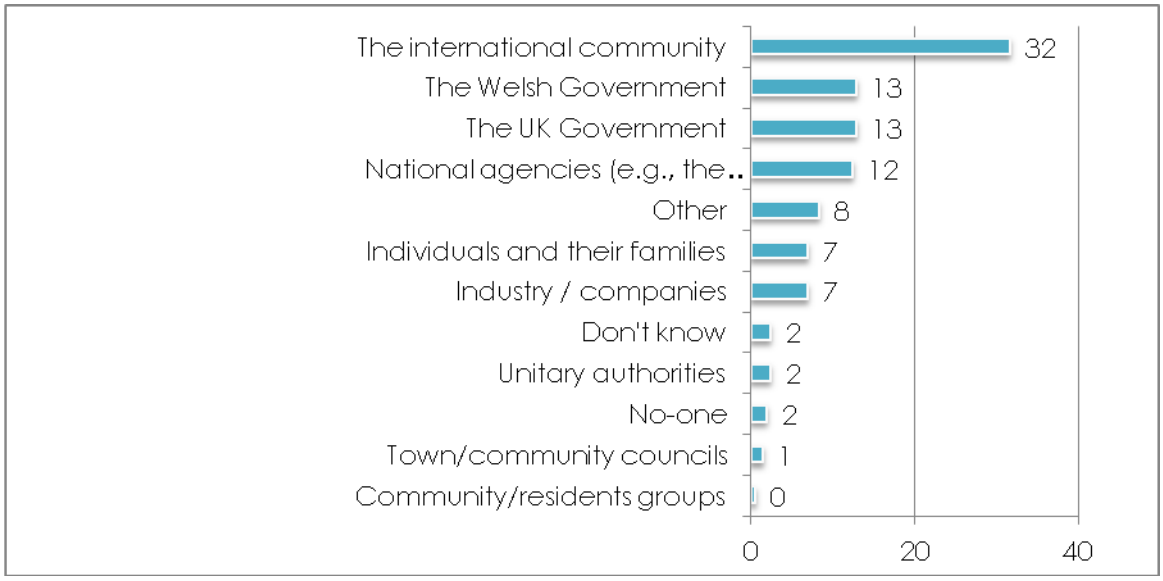


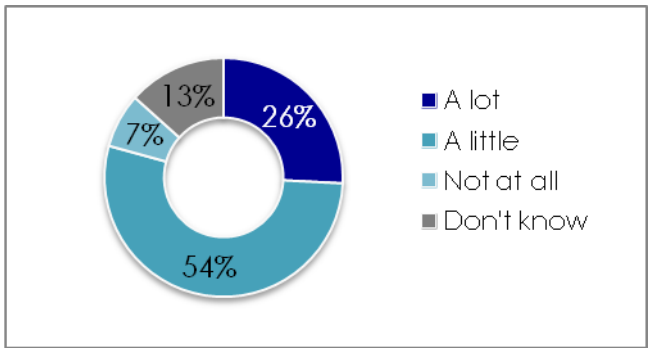
Figure 12. 'Which one of the following do you think should be mainly responsible for taking action to respond to the consequences of climate change?'



5.5 Climate Change Risk Perception and Adaptation

Most respondents (80%) stated that they thought their community would be affected by climate change in the future (Figure 13). A range of specific risks was cited and again, consistent with similar studies, most answers related to flooding and extreme weather events (see Appendix D.2 for detailed responses).

Figure 13. 'To what extent do you feel your community will be affected by climate change in the coming years?'



Most (N=150 English; N=12 Welsh) respondents answered the subsequent open-ended question about what action their community was taking to prepare for climate change impacts (i.e., adaptation; (see Appendix D.3 for raw responses). However, of these, 65 indicated that no action was being taken (or they did not know if any was). The remainder often described mitigation or broader sustainability actions, such as recycling, reducing pesticides, energy saving activities or renewables. Some, however, did indicate action was being taken around flooding (e.g., awareness groups, wardens, defences) or that they had (unsuccessfully) lobbied for flood action/defences.

A total of 154 English and 14 Welsh respondents answered the open-ended question on barriers to adaptation (see Appendix D.4 for raw responses). Most commonly these include lack of funding/resources, community ignorance/apathy, lack of knowledge/expertise, lack of power/responsibility, or lack of political leadership or international action.

As shown in Figure 14, respondents indicated community members could rely on others in the community for support in flood events. Despite this evident social capital, financial support and training are also cited as being essential to allow communities to respond to climate change (Figure 15).

Figure 14. 'If members of your community were affected by flooding in the future, to what extent would they be able to rely on neighbours or others in the community for support?'

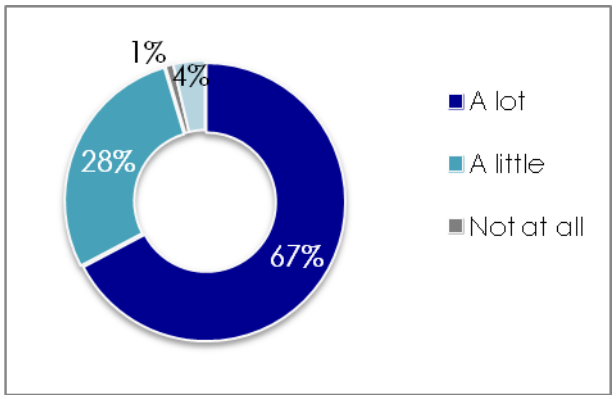
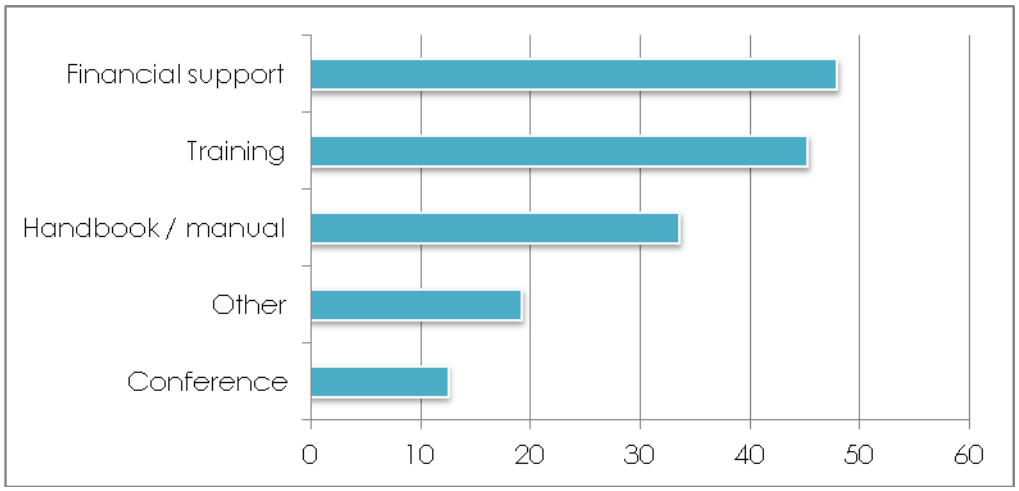


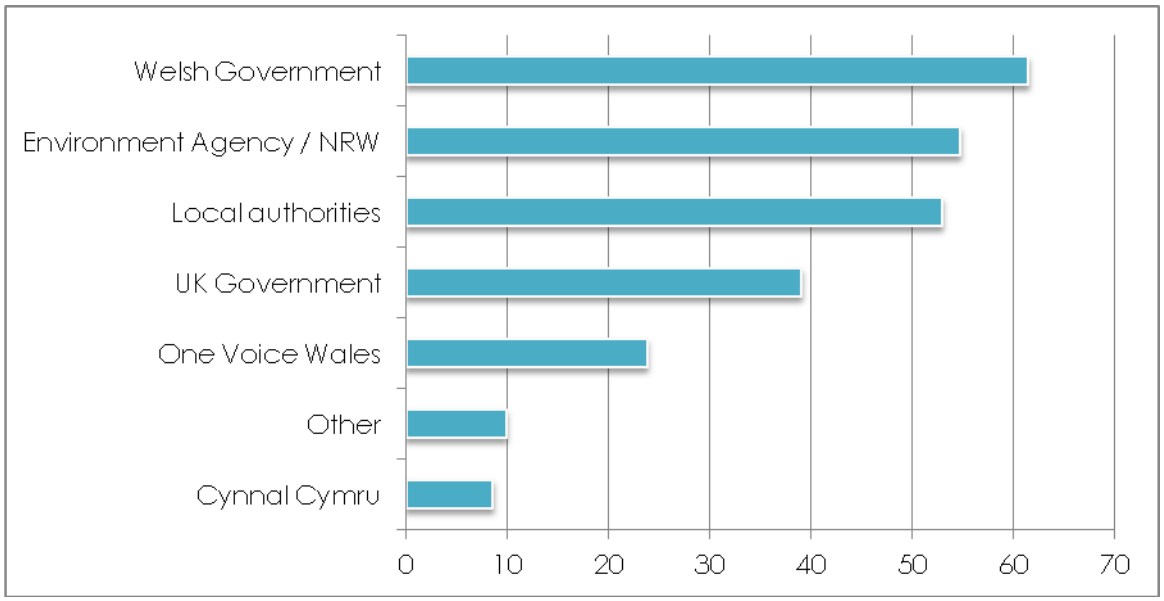
Figure 15. 'Which of the following would be useful to help your community effectively respond to climate change?'



5.6 Support and Best Practice for Sustainability

When asked about who they would go to for sustainability or climate change assistance, most respondents cited Welsh Government, then Environment Agency/ Natural Resources Wales and Local Authorities (Figure 16).

Figure 16. 'Which of the following organisations would you go to for support in addressing climate change or sustainability?'



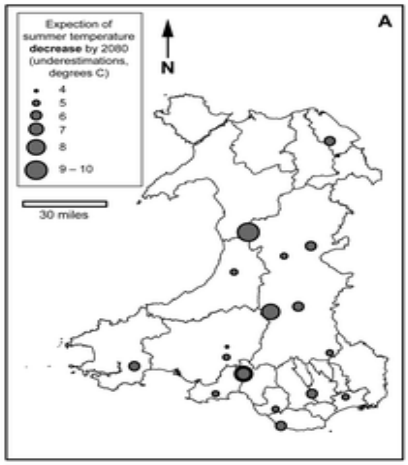
Two-thirds (65%) of respondents indicated they are aware of examples of best practice in tackling climate change or sustainability at community level. Only 69 English and 5 Welsh respondents, however, answered the follow-up open-ended question that asked them to give details of these examples (see Appendix D.5 for raw responses). Specifically, suggestions included a diverse range of activities from local food schemes to energy efficiency initiatives. Renewable energy (e.g., Green Valleys) and recycling schemes appeared to be the most common examples provided.

6. Mapping Results

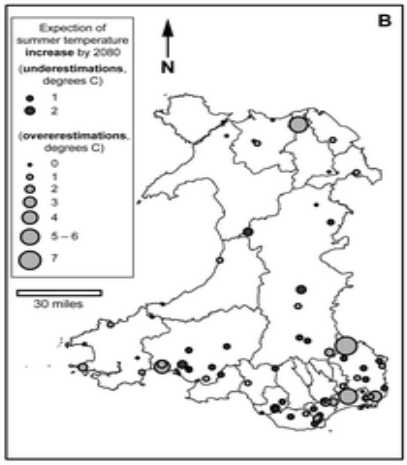
The following section maps out how well respondents understand projected climate change impacts in Wales. These specifically relate to summer temperatures, annual rainfall and sea level changes.

6.1 Summer Temperatures

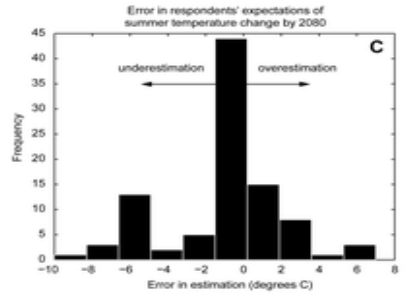
Figure 17. Differences between projected and perceived summer temperature changes by 2080



Perceptions of summer temperatures appear to under-estimate projected figures by up to 8ºc at three sites in central and southwest Wales. There are also sporadic under-estimations elsewhere, although these are more in the region of 4-5 ºC.



Perceptions of temperature increases are fairly accurate, with just four instances of +4 ºC error. Three of these are in the east of Wales.

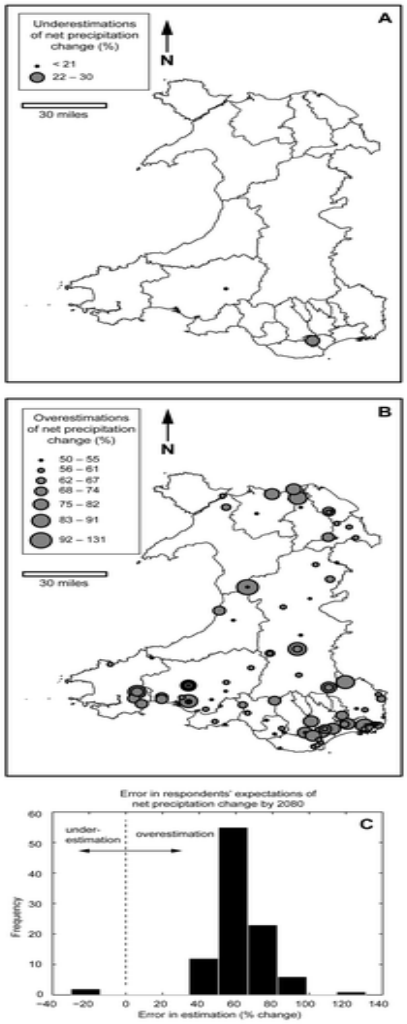


The majority of temperature change perceptions correlate with scientific projections. There are more over-estimations than under-estimations, although these are mainly within one or two units of error and so are considered to be fairly close to the current projections. Interestingly, twelve responses cited a 6 ºC under-estimation. Reasons for this are unknown and could be further investigated.

[5] **Note that for these figures, we only map responses that included a postcode. Fig. 17.** Difference between projected change in summer temperature by 2080, as calculated by UKCP09, and the expected

6.2 Annual Rainfall

Figure 18. Differences between projected and perceived precipitation changes by 2080



Perceptions of precipitation appearing to be below projected levels occur at just a few sites in the south of Wales. One response cited an under-estimation of 22-30%, but bearing in mind the precipitation projections of -10% for this site, it is not considered to be of particular significance.

Over-estimations of perceived precipitation change are widespread throughout Wales, with widespread occurrences of +92%.

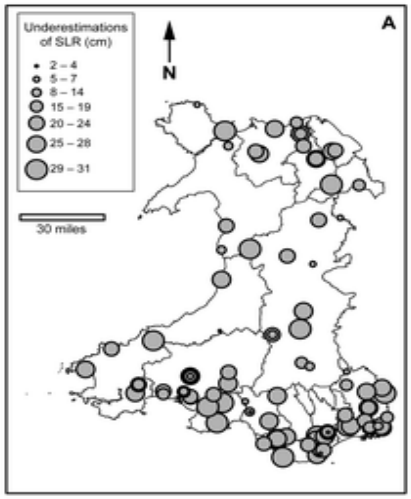
The majority of precipitation perceptions deviate from scientific projections. There are significantly more over-estimations than under-estimations, and these are generally within the +60 to +80% bandwidth. This is perhaps related to the heavy rainfall and associated flooding events of December 2012, just prior to questionnaire circulation. It may also indicate potential inaccuracies in the existing Wales climate projections.

change reported by respondents (n = 95; mapped by self-reported post code). Projected temperatures derive from the UKCP09 medium emissions scenario, mapped according to the UKCP09 25 km grid. Summer temperatures by 2080 are expected to rise across Wales. (A) Map of respondents who reported they expect future summer temperatures to decrease, thereby underestimating future temperatures, scaled by margin of error. (B) Map of respondents who reported they expect future summer temperatures to increase, but whose estimates were either under or over the projected amount of change. Responses are scaled by margin of error. (C) Histogram of all responses mapped in (A) and (B).

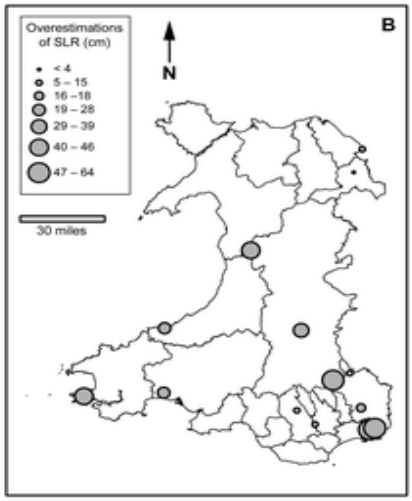
[6] **Fig. 18.** Difference between projected percent change in annual precipitation by 2080, as calculated by UKCP09, and the expected percent change reported by respondents (n = 99; mapped by self-reported post code). UKCP09 splits its precipitation-change projections into summer and winter; we add the two datasets (for the medium emissions scenario, mapped according to the UKCP09 25 km grid) to calculate the net percent precipitation change for Wales and then compare the respondents' answers to that figure. By 2080, UKCP09 projection shows a net decrease in precipitation across Wales. (A) Map of respondents who underestimated net percent precipitation change, scaled by margin of error; these respondents correctly anticipated less precipitation in the future. (B) Map of respondents who overestimated net percent precipitation change, scaled by margin of error; these respondents expected net precipitation to increase in the future. (C) Histogram of all responses mapped in (A) and (B).

6.3 Sea Level

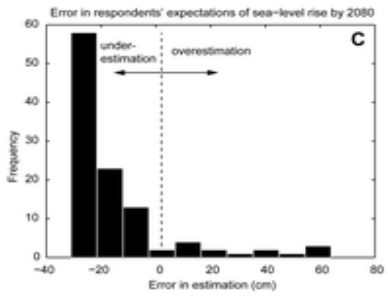
Figure 19. Differences between projected and perceived sea level changes by 2080



Underestimates in perceptions of sea level change are widespread across Wales, with most responses citing 15-28 cm less than projected figures. Levels of error are particularly marked in southern counties.



Over-estimations of sea level change are sporadic across Wales, although deviations from projected levels appear to be slightly higher in eastern areas. There are not enough cases to warrant further investigation.



The majority of perceptions regarding sea level change appear to be under-estimates in the order of 10-30 cm. This is perhaps biased by the existence of sea defences along stretches of coast, thus providing a sense of security.

[7] **Fig. 19.** Difference between projected relative sea-level rise by 2080, as calculated by UKCP09 for Cardiff (= 36.2 cm; see **Appendix C**), and the expected change reported by respondents (n = 109; mapped by self-reported post code). (A) Map of respondents who underestimated future sea-level rise, scaled by margin of error. (B) Map of respondents who overestimated future sea-level rise, scaled by margin of error. (C) Histogram of all responses mapped in (A) and (B). No respondents reported that they expect sea level to decrease in the future.

7. Discussion and Conclusions

In summary, the survey has shown that:

a) *Issue importance:* Climate change is not the most important issue for Welsh communities, but concern about some impacts (e.g., flooding, storms) is high – many having already directly experienced these.

b) *Knowledge*: Most say they know 'a fair amount' about climate change; most accept there is a human influence on climate; most believe rainfall and sea-levels will rise, but there is less certainty about temperature rise.

c) *Concern*: Most (77%) are concerned about climate change; comparable to the proportion (84%) of the general public in Wales.

d) *Beliefs*: Welsh flooding and SLR is linked to CC, but fewer see drought as a risk. Few see opportunities (tourism, crops) arising from CC. Trust in climate scientists is not high. Responsibility for tackling CC is located primarily with international communities (community, environment, economy are seen as equally important).

e) *Action*: financial support and training are rated as most needed for communities to respond to CC. WG, EA and LAs most likely to be approached for support. But communities will pull together to support each other during flood events.

f) *Best practice*: Most are aware of examples of best practice in tackling climate change or sustainability at community level, ranging from local food schemes to energy efficiency initiatives. Energy and waste schemes are best known, suggesting much less is known about climate change adaptation than mitigation.

These results are consistent with similar research carried out across the UK, particularly Capstick et al's (2013) Welsh climate change public perception survey, Borne's 2010 review of community council and climate change response in the UK and Bulkeley and Betsill's 2003 study of local climate protection in Australia, the UK and the US.

Despite a relative lack of research on the perceptions and experiences of community council agents in relation to climate change, there appears to be a fundamental need for increased education and training on various topics to do with climate change and its governance at the local level. While certain climate change risks (e.g., flooding, temperature rise) are fairly well understood, others (e.g., sea-level rise, drought) are less well known. Community councillors also lack awareness of how existing political mechanisms should be utilised and feel that their expertise is not always exploited fully. Therefore, the propensity to support initiatives is somewhat compromised by this.

Whilst education and training are desirable, this is not sufficient alone to improve community council action. A much broader range of factors need to be taken into account, such as access to funding and strong leadership. In particular, given extra powers and resources, Community councils could expand their role in line with best practice recommendations from successful initiatives. Community councillors can act as '*local experts*' mediating between the community and higher levels of government,

forging links and partnerships with other agencies, as is crucial in order to best support community initiatives.

There are also other barriers to be overcome. These include the local political structure, poor levels of understanding between community councillors and unitary authority officers and difficulties within the community context (e.g., community identity, geography, attachment, etc.). There also exist tensions between more comprehensive interventions and those that are tailored to the specific community and even differences within communities. In addition, practical issues such as maintaining volunteer involvement, administrative problems and lack of communication between agents and government levels can prove limiting.

As concluded in the current research activity, other issues in the community are often more pressing than climate change, and communities may not always be willing to respond to generic climate change and sustainability concerns but may express enthusiasm if interventions are geared towards resolving local issues.

Taking the findings of the survey and literature review into account, a number of key conclusions can be drawn. These primarily relate to implications for community councils and implications for Welsh Government.

The implications of the research for community councils are as follows:

1. There is a need to improve knowledge about local climate change projections and implications, particularly sea level in the south and south east of Wales.
2. There is a need to develop effective climate change mitigation and, particularly, adaptation measures at local level. These measures should build on councillors' and Welsh public concerns about climate change and related issues (e.g., flooding), and exploit existing social capital (e.g., community support during flood events) and good practice in sustainability at community level.
3. There is a need to recognise that climate change mitigation and adaptation is a local as well as a national and global problem.
4. There is a need to identify opportunities (e.g., tourism) as well as threats (e.g., flooding) arising from climate change at local level.

However, it is noted that community councillors are volunteers and donate a great deal of their time to public service, therefore have varying capacities to become involved in the current mode of training activities. E-training may have a role to play here (CIPD 2011). In addition, concerted efforts need to focus on encouraging and facilitating involvement and rewarding success (not necessarily financial rewards) at community level, particularly as community support during flood events has proven to be so beneficial.

Although this research primarily focussed on the role of community councils, there are also a number of wider implications of interest to statutory agencies in Wales. These include the following:

1. Climate change projections and case studies of best practice have successfully reached most community councils and there is an opportunity to build upon the firm foundations laid here.
2. Most community councillors have some climate change knowledge, but would benefit from greater training that facilitates application of mitigation and, particularly, adaptation tools.
3. Reasons for community inaction should be addressed: provision of funding/ resources, community training and access to expertise is required.
4. Local and national community leadership is lacking. This may benefit from a leadership development framework (e.g., similar to public sector fast-track training schemes).
5. Welsh climate change projections need to be validated so that trust in science can be improved.
6. Signposts to appropriate support organisations should be clearer and more widely advertised.
7. Climate change and sustainability have to be contextualised by linking them to what matters to communities (e.g., lack of local services; over-development; flooding; transport). Effective local plans offer great potential as the means by which residents can play a part in developing the services and strategies that take care of both.

In light of these observations, it is concluded that further training and provision of robust, long-term capacity development initiatives are required for community councillors in Wales. These should specifically address:

a) Identification of local climate change risks and opportunities.
b) Education about local climate change impacts.
c) Awareness-raising of best practice climate change mitigation and – particularly – adaptation projects.
d) Awareness-raising of organisations that can assist climate change mitigation and adaptation activities.
e) Awareness-raising of tools to assist climate change mitigation and adaptation activities.

Information about funding sources and access to expertise on local mitigation and adaptation schemes also needs to be more visible, although it is recognised that some messages about climate change have already begun to percolate through to community level, and this should be built upon. We also propose that community initiatives to address climate change require a single trusted resource base, able to provide advice and support relevant to local application of mitigation and adaptation tools. In particular, support in co-ordinating and directing projects would be useful to guide communities that are lacking the skills, experience, confidence or time to develop projects independently. Having said that, some individuals (especially clerks in many cases) involved in community councils have vast experience and expertise in this area, and so would

benefit more from having clear signposts to sources of funding, implementation tools and information that will allow them to develop their own initiatives.

A number of conclusions have been drawn from this research, many of which re-iterate those found in previous studies. What is required now is the translation of ideas into actions. Foundations have been laid that have provided community councillors in Wales with some basic information about climate change science. In addition, the survey has asked about local climate change implications and responses, and has potentially provoked some thought and further interest in the area, particularly given the recent prevalence of widespread flooding in Wales. The opportunity to take advantage of these strong roots should not be missed and the time is right to explore the possibility of creating and delivering a robust climate change capacity development and reward scheme for community councils.

8. Actions and Next Steps

From this evidence base we propose to develop a Stage Two application that will propose the trial of two approaches, the aim of which will be to catalyse changes in attitudes, perceptions and ultimately behaviour:

- Any practical action will need to first address one of the salient findings of this research – that climate change is generally seen as a global and not a local issue.

- In addition we may want to address the issue that most perceptions of climate change focus on localised flooding and not on drought, heat stress or sea level rise; and that more is known about mitigating climate change than adapting to it.

To do either or both of these will require direct engagement either as training sessions or regional seminars backed up by published guidance. Having carefully prepared the ground however, we think there are several approaches that will prove fruitful not least because they build upon existing best practice.

1. **Flood Risk**
   Face-to-face engagement with residents tends to be much more effective than more indirect communication[8] (e.g., leaflets). Furthermore, the most trusted and locally relevant sources of information tend to be members of the community who have flooding experience, rather than formal agencies (e.g., Environment Agency) whose advice or warnings may seem too generic or irrelevant (e.g., Darnton et al., 2013). Resources are likely to be needed to enable community members/representatives to provide this local information and advice.

2. **Local Resilience Plans**
   Using the example of Cardiff, this approach provides an opportunity to integrate the principles of co-design and consultation into climate change adaptation. A resilience plan can be wide-ranging and extend beyond extreme local weather to climate change-related national/regional/global threats such as interruption of food supply, power and fuel shortages, invasive species, pandemics and economic crisis. Addressing these threats integrates the very local with the county/region and national and provides an excellent opportunity to test and prove the value of integrating community councils into the strategic policy structure. Resilience plans also pave the way for more general community sustainability plans by linking climate threats to the management of green space, provision of transport, supply of food and economic/social resilience.

These two approaches to climate change adaptation could be piloted in several places. We recommend that at least one trial should focus on south east Wales where our research has shown a disconnection between the perception of sea level rise as a risk and the projected likelihood of coastal flooding. The Stage One research findings will be further analysed to identify other areas where pilot projects would be most relevant.

[8] http://www.environment-agency.gov.uk/homeandleisure/news/events/124191.aspx Downloaded 11/03/13

Measuring Impact

One of the primary indicators of change that we would seek to identify is written and reported evidence that climate change as a local issue is referred to in community and town council planning decisions, strategic documents and consultation responses. We could seek evidence for this in the areas where we have conducted training/seminars and use other areas as control groups to test the hypothesis that our interventions have produced a change in attitudes and behaviours. Other indicators could include behavioural changes adopted at household levels (cf. Box 1), although these would need to be specified once appropriate case studies had been identified.

For the two approaches listed above we propose a general framework of evaluation. This is known as PDSA – Plan, Do, Study, Act – and has been used in the NHS. Using this approach would enable the project team and the councils involved in the pilots to monitor, evaluate and modify the approaches within delivery rather than conducting an 'end of pipe' post hoc analysis. The action-based research approach also ensures that the councils themselves are part of the process of evaluation and are not the subjects of evaluation (Elden & Chrisholm, 1993). Indeed, educational research has shown that reflection in and on action is effective in changing behaviours since it utilises the cognitive and metacognitive capabilities of adults as self-aware, motivated and autonomous actors rather than as passive receptors of information (e.g., Kolb, 1984; Lewin, 1947). Our use of PDSA as an evaluation tool acknowledges this, seeing councillors as partners in a process of learning and behaviour change rather than as subjects in a research experiment. Furthermore, recommendations from the research are more likely to be acted upon if delivery agents are involved in the research process.

Acknowledgements

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Appendices

Appendix A: Questionnaire

1. English Version

Strong Roots Survey

Introduction

Following the recent letter from Paul Egan, One Voice Wales, we are writing to ask whether you could complete this short questionnaire. The questions ask about issues of importance to your community, including environmental issues such as climate change.

The research is being undertaken by Cardiff University and is funded by the Welsh Government Support for Sustainable Living scheme, delivered by Environment Wales and Cynnal Cymru-Sustain Wales. Your help with this project is vital to helping understand how town and community councils perceive and are dealing with environmental and related issues, and what additional support may be helpful to you.

The survey will only take around 10-15 minutes to complete, and all data gathered will be kept strictly confidential.

The research has been approved by Cardiff University's School of Psychology Ethics Committee.

Please answer as best you can from your own knowledge. You are not required to seek the Council's view as we are looking for individual perspectives from local Councillors. Participation is voluntary, and you do not have to answer any questions that you would prefer not to.

The deadline for completed questionnaires is 11th January 2013, although earlier completion would be very much appreciated.

Thank you very much indeed for your help.

Dr Lorraine Whitmarsh, School of Psychology, Cardiff University
Email: WhitmarshLE@cardiff.ac.uk
Tel: 029 20 874000

Supported by Lyn Cadwallader, Chief Executive, One Voice Wales

Section 1. Priorities in your community

1. What do you see as being the main **issues or challenges** facing your community over the coming years? [open]

2. How **important** are each of the following environmental issues for your community?
    a. Flooding
    b. Air pollution
    c. Climate change
    d. Erosion
    e. Sea-level rise
    f. Drought
    g. Storms or extreme weather events
    h. Water pollution
    i. Poor waste management (e.g. inadequate provision for recycling)
    j. Littering
    k. Traffic/congestion
    l. Species extinction
    m. Using up resources

    [Very important, quite important, not very important, not at all important]

3. In the **past three years**, to what extent has your community been **affected** by the following problems:
    a. Flooding
    b. Drought
    c. Erosion
    d. Storms or extreme weather events

    [A lot, a little, not at all]

Section 2. Your views on climate change

4. How much would you say you personally **know** about climate change? [A lot, a fair amount, just a little, nothing]

5. How **concerned**, if at all, are you about climate change, which is sometimes referred to as 'global warming'? [Very concerned, quite concerned, not very concerned, not at all concerned, don't know]

6. Thinking of the **causes** of climate change, which best describes your own opinion? [Climate change is entirely caused by natural processes; climate change is mainly caused by natural processes; climate change is partly caused by natural processes and partly caused by human activity; climate change is mainly caused by human activity; climate change is entirely caused by human activity; I think there is no such thing as climate change; don't know]

7. Please indicate to what extent you **agree or disagree** with the following statements: [Strongly agree, tend to agree, neither agree nor disagree, tend to disagree, strongly disagree]: [note: the order of these statements will be randomised]
    - The seriousness of climate change is exaggerated
    - Most scientists agree that people are causing climate change
    - We can trust climate scientists to tell us the truth about climate change

- Whether it is important or not, on a day-to-day basis I am bored of hearing about climate change
- The recent floods in Wales were due to climate change
- My local area will be affected by climate change
- Climate change will mostly affect areas that are far away from here
- I think that climate change is likely to be a serious problem for Wales
- It is more important for Wales to focus on adapting to the effects of climate change, rather than trying to reduce the causes of climate change
- My community has a responsibility to do something about climate change
- If most people in my local community changed their behaviour, this would make a difference to climate change
- If most people in Wales changed their behaviour, this would make a difference to climate change
- If most people in Europe changed their behaviour, this would make a difference to climate change
- Acting to address climate change should be central to government decision-making in Wales
- Climate change will increase the risk of flooding in Wales
- Climate change will increase the risk of water shortages and droughts in Wales
- Climate change will increase opportunities for tourism in Wales, due to higher temperatures
- Climate change will increase opportunities to grow new crops in Wales
- Climate change will increase the risk of sea-level rise around Wales

8. **When**, if at all, do you think Wales will start feeling the effects of climate change? [We are already feeling the effects; 10 years from now; 25 years from now; 50 years from now; 100 years from now or longer; never; don't know]

9. Which one of the following do you think should be **mainly responsible** for taking action to respond to the consequences of climate change (e.g., flooding, storm damage, drought)? [Individuals and their families; community/ residents groups; industry/ companies; town/community councils; unitary authorities; national agencies such as the Environment Agency and the NHS; the Welsh Government; the UK Government; the international community; other [please specify]; no-one; don't know]

10. If members of your community were affected by flooding in the future, to what extent would they be able to **rely on** neighbours or others in the community for support? [A lot, a little, not at all, don't know]

11. a. To what extent do you feel your community will be **affected** by climate change in the coming years? [A lot, a little, not at all, don't know]

b. [If selected 'a lot' or 'a little'] In what ways will it be affected? [open]

12. What **action**, if any, has your community taken to prepare for these impacts? [open]

13. How effective do you consider this action to be? [Very effective, quite effective, not very effective, not at all effective, don't know]

14. What **barriers**, if any, do you feel there are to effectively responding to climate change in your community? [open]

15. Which of the following would be useful to help your community effectively respond to climate change? [Click all that apply: Training, conference, handbook/manual, financial support, other [please specify]…]

16. Which of the following **organisations** would you go to for support in addressing climate change or sustainability (i.e., the balanced management of social, economic and environmental priorities)? [Click all that apply: Welsh Government, local authorities, One Voice Wales, Environment Agency, Cynnal Cymru, UK Government, other [please specify]…]

17. a. Are you aware of any examples of **good practice** in addressing climate change or sustainability at the community level? [yes, no]

b. [If yes] Please provide brief details here: [open]

18. a. In your opinion, will **summer temperatures** in your area increase, decrease or remain the same by **2080**? [Increase, decrease, remain the same, don't know]

b. [If selected increase] By how many degrees do you think the temperature will increase, on average? [1°C, 2 °C, 3 °C, 4 °C, 5 °C, 6 °C, 7 °C, 8 °C, 9 °C, 10 °C]
b. [if select decrease] By how many degrees do you think the temperature will decrease, on average? [1°C, 2 °C, 3 °C, 4 °C, 5 °C, 6 °C, 7 °C, 8 °C, 9 °C, 10 °C]

19. a. In your opinion, do you think **annual rainfall** in your area will increase, decrease or remain the same by **2080**? [Increase, decrease, remain the same, don't know]

b. [If selected increase] By how much do you think annual rainfall will increase, on average? [10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%]
b. [If selected decrease] By how much do you think annual rainfall will decrease, on average? [10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%]

20. a. In your opinion, will local sea level increase, decrease or remain the same by **2080**? [Increase, decrease, remain the same, don't know]

b. [If selected increase] By how much do you think local sea level will increase? [5 cm, 10cm, 15cm, 20cm, 25cm, 30cm, 35cm, 40cm, 45cm, 50cm, 55cm, 60cm, 65cm, 70cm, 75cm, 80cm, 85cm, 90cm, 95cm, 100cm or more]
b. [If selected decrease] By how much do you think local sea level will decrease? [5 cm, 10cm, 15cm, 20cm, 25cm, 30cm, 35cm, 40cm, 45cm, 50cm, 55cm, 60cm, 65cm, 70cm, 75cm, 80cm, 85cm, 90cm, 95cm, 100cm or more]

Section 3. About you and where you live

Finally, so we can compare the views of different people and areas, please answer the following questions:

21. Please indicate to what extent you **agree or disagree** with the following statements: [Strongly agree, tend to agree, neither agree nor disagree, tend to disagree, strongly disagree]:
    - The place where I live is unique and distinctive
    - There is a strong sense of community feeling in the place that I live
    - Caring for the environment is an important part of living in Wales
    - Caring for the community is an important part of living in Wales
    - Supporting the economy is an important part of living in Wales
    - The landscape and countryside where I live are very special to me
    - I can influence decisions that affect this area
    - I strongly identify with what it means to be Welsh
    - Being environmentally friendly is an important part of who I am
    - I think of myself as someone who is very concerned with environmental issues

22. What is your postcode?

23. What town do you live in or what is your closest town?

24. Please indicate the age bracket you are in: [16-24; 25-44; 45-64; 65 or over; prefer not to say]

25. Are you… [Male, female, prefer not to say]

26. What is your highest qualification: [No formal qualifications; GCSE/O-Level, A-level/Higher/BTEC, vocational/NVQ, degree or equivalent, postgraduate qualification, other [please specify], prefer not to say]

27. a. The research team at Cardiff University may want to talk to a small number of people who have taken part in this survey to ask some further questions about climate change. Would you be willing to take part in these brief, confidential interviews? [yes, no]

    b. If yes, please could you provide a phone number and/or email address and contact name:

Thank you

Thank you very much for completing our survey. Your assistance with this project has been vital to helping understand how town and community councils perceive and are dealing with environmental and related issues, and what additional support may be helpful to you. We will feed this information back to Welsh Government and it will be used to inform the scope for further work in this area.

All data gathered will be kept strictly <u>confidential</u>.

If you have any comments or queries about this research, please get in touch with:
Dr Lorraine Whitmarsh,
School of Psychology, Tower Building, 70 Park Place, Cardiff University, Cardiff CF10 3AT
Tel: 029 20 874000
Email: WhitmarshLE@cardiff.ac.uk

For further contact or complaint, please contact the School of Psychology Ethics Committee:
Secretary of Ethics Committee, School of Psychology, Tower Building, 70 Park Place, Cardiff University, Cardiff CF10 3AT
Email: pychethics@cardiff.ac.uk

2. Welsh Version

Arolwg Gwreiddiau Cryfion

Cyflwyniad

Yn dilyn y llythyr diweddar gan Paul Egan, Un Llais Cymru, rydym yn ysgrifennu i ofyn a allech lenwi'r holiadur byr hwn. Mae'r cwestiynau'n holi am faterion o bwys i'ch cymuned, gan gynnwys materion amgylcheddol fel newid hinsawdd.

Mae'r ymchwil yn cael ei wneud gan Brifysgol Caerdydd ac yn cael ei ariannu gan gynllun Cefnogi Byw'n Gynaliadwy Llywodraeth Cymru, a gyflwynir gan Amgylchedd Cymru a Cynnal Cymru. Mae eich cymorth gyda'r prosiect hwn yn hollbwysig yn ein helpu i ddeall sut mae cynghorau tref a chymuned yn edrych ar faterion amgylcheddol a rhai cysylltiol a sut maen nhw'n delio â nhw, a pha gefnogaeth ychwanegol allai fod yn ddefnyddiol ichi.

Ni fydd yr arolwg yn cymryd dim mwy na thua 10-15 munud i'w gwblhau, a bydd pob data a gesglir yn cael ei gadw'n gwbl gyfrinachol.

Cymeradwywyd y gwaith ymchwil gan Bwyllgor Moeseg Ysgol Seicoleg Prifysgol Caerdydd.

Atebwch orau y gallwch o'ch gwybodaeth eich hun. Nid oes rhaid ichi holi barn y Cyngor gan mai chwilio yr ydym am farn cynghorwyr lleol unigol. Mater gwirfoddol yw cymryd rhan, ac nid oes rhaid ichi ateb unrhyw gwestiynau y byddai'n well gennych beidio eu hateb.

Y dyddiad cau ar gyfer llenwi a danfon holiaduron yn ôl yw'r 11eg Ionawr 2013, er y byddem yn ddiolchgar iawn os gallech ei lenwi ynghynt.

Diolch yn fawr iawn ichi am eich cymorth.

Dr Lorraine Whitmarsh, Ysgol Seicoleg Prifysgol Caerdydd
Ebost: WhitmarshLE@cardiff.ac.uk
Ffôn: 029 20 874000

Cefnogwyd gan Lyn Cadwallader, Prif Weithredwr, Un Llais Cymru

Adran 1. Blaenoriaethau yn eich cymuned

1. Beth yn eich barn chi yw'r prif **faterion neu heriau** sy'n wynebu eich cymuned dros y blynyddoedd nesaf? [agored]

2. Pa mor **bwysig** yw pob un o'r materion amgylcheddol canlynol i'ch cymuned?
   a. Llifogydd
   b. Llygredd awyr
   c. Newid hinsawdd

d. Erydiad
e. Lefel y môr yn codi
f. Sychder
g. Stormydd neu ddigwyddiadau tywydd eithafol
h. Llygredd dŵr
i. Rheolaeth gwastraff gwael (e.e. darpariaeth annigonol ar gyfer ailgylchu)
j. Sbwriel
k. Traffig/tagfeydd
l. Rhywogaethau'n diflannu
m. Gorddefnyddio adnoddau

[Pwysig iawn, gweddol bwysig, ddim yn bwysig iawn, ddim yn bwysig o gwbl]

3. Yn y **tair blynedd diwethaf**, i ba raddau gafodd eich cymuned ei **heffeithio** gan y problemau canlynol:
   a. Llifogydd
   b. Sychder
   c. Erydiad
   d. Stormydd neu ddigwyddiadau tywydd eithafol

[Llawer, rhyw gymaint, ddim o gwbl]

Adran 2. Eich barn am newid hinsawdd

4. Faint fyddech chi'n ddweud yr ydych chi'n bersonol yn ei **wybod** am newid hinsawdd? [Llawer iawn, cryn dipyn, rhyw gymaint, dim]

5. Pa mor **bryderus**, os o gwbl, ydych chi am newid hinsawdd, sydd weithiau'n cael ei alw'n 'gynhesu byd-eang'? [Pryderus iawn, gweddol bryderus, ddim yn bryderus iawn, ddim yn bryderus o gwbl, ddim yn gwybod]

6. Gan feddwl am yr hyn sy'n **achosi** newid hinsawdd, pa un o'r rhain yw'r disgrifiad gorau o'ch barn chi? [Mae newid hinsawdd yn cael ei achosi'n gyfan gwbl gan brosesau naturiol; mae newid hinsawdd yn cael ei achosi'n bennaf gan brosesau naturiol; mae newid hinsawdd yn cael ei achosi'n rhannol gan brosesau naturiol ac yn rhannol gan weithgarwch dynol; mae newid hinsawdd yn cael ei achosi'n bennaf gan weithgarwch dynol; mae newid hinsawdd yn cael ei achosi'n gyfan gwbl gan weithgarwch dynol; nid wyf yn credu fod y fath beth â newid hinsawdd; ddim yn gwybod]

7. Nodwch i ba raddau rydych yn **cytuno neu'n anghytuno** gyda'r datganiadau canlynol: [Cytuno'n gryf, tueddu cytuno, ddim yn cytuno nac yn anghytuno, tueddu anghytuno, anghytuno'n gryf]: [note: the order of these statements will be randomised]
   - Mae difrifoldeb newid hinsawdd yn cael ei orbwysleisio
   - Mae'r rhan fwyaf o wyddonwyr yn cytuno fod pobl yn creu newid hinsawdd
   - Gallwn ymddiried mewn gwyddonwyr hinsawdd i ddweud y gwir wrthym am newid hinsawdd
   - Boed yn bwysig ai peidio, o ddydd i ddydd rwyf wedi cael digon o glywed am newid hinsawdd
   - Digwyddodd y llifogydd diweddar yng Nghymru oherwydd newid hinsawdd

- Bydd fy ardal leol yn cael ei heffeithio gan newid hinsawdd
- Bydd newid hinsawdd yn bennaf yn effeithio ardaloedd sydd ymhell o'r fan hyn
- Rydw i'n credu fod newid hinsawdd yn debyg o fod yn broblem ddifrifol i Gymru
- Mae'n bwysicach fod Cymru'n canolbwyntio ar addasu i effeithiau newid hinsawdd, yn hytrach na cheisio lleihau achosion newid hinsawdd
- Mae gan fy nghymuned i gyfrifoldeb i wneud rhywbeth am newid hinsawdd
- Pe bai'r rhan fwyaf o bobl yn fy nghymuned leol yn newid eu hymddygiad, byddai hynny'n gwneud gwahaniaeth i newid hinsawdd
- Pe bai'r rhan fwyaf o bobl yng Nghymru yn newid eu hymddygiad, byddai hynny'n gwneud gwahaniaeth i newid hinsawdd
- Pe bai'r rhan fwyaf o bobl yn Ewrop yn newid eu hymddygiad, byddai hynny'n gwneud gwahaniaeth i newid hinsawdd
- Dylai gweithredu i fynd i'r afael â newid hinsawdd fod yn ganolog i benderfyniadau'r llywodraeth yng Nghymru
- Bydd newid hinsawdd yn creu mwy o risg o lifogydd yng Nghymru
- Bydd newid hinsawdd yn creu mwy o risg o brinder dŵr ac o sychderau yng Nghymru
- Bydd newid hinsawdd yn creu mwy o gyfleoedd ar gyfer twristiaeth yng Nghymru, oherwydd tymereddau uwch
- Bydd newid hinsawdd yn creu mwy o gyfleoedd i dyfu cnydau newydd yng Nghymru
- Bydd newid hinsawdd yn creu mwy o risg y bydd lefel y môr yn codi o gwmpas Cymru

8. **Pryd**, os o gwbl, ydych chi'n credu y bydd Cymru'n dechrau teimlo effeithiau newid hinsawdd? [Rydym yn teimlo'r effeithiau yn barod; ymhen 10 mlynedd; ymhen 25 mlynedd; ymhen 50 mlynedd; ymhen 100 mlynedd neu'n hwyrach; byth; ddim yn gwybod]

9. Yn eich barn chi, pa un o'r canlynol ddylai fod yn **bennaf gyfrifol** am weithredu i ymateb i ganlyniadau newid hinsawdd (e.e., llifogydd, difrod storm, sychder)? [Unigolion a'u teuluoedd; grwpiau cymunedol/trigolion; diwydiannau/cwmnïau; cynghorau tref/cymuned; awdurdodau unedol; asiantaethau cenedlaethol fel Asiantaeth yr Amgylchedd a'r GIG; Llywodraeth Cymru; Llywodraeth y DG; y gymuned ryngwladol; eraill (rhowch fanylion]; neb; ddim yn gwybod]

10. Pe bai aelodau eich cymuned yn cael eu heffeithio gan lifogydd yn y dyfodol, i ba raddau fydden nhw'n gallu **dibynnu ar** gefnogaeth cymdogion neu eraill yn y gymuned? [Llawer, rhyw gymaint, ddim o gwbl; ddim yn gwybod]

11. a. I ba raddau ydych chi'n credu y bydd eich cymuned yn cael ei **heffeithio** gan newid hinsawdd dros y blynyddoedd nesaf? [Llawer, rhyw gymaint, ddim o gwbl; ddim yn gwybod]

b. [Os ddewisoch chi 'llawer' neu 'rhyw gymaint'] ym mha ffyrdd fydd hi'n cael ei heffeithio? [agored]

12. Pa **gamau**, os o gwbl, a gymerodd eich cymuned i baratoi ar gyfer yr effeithiau hyn? [agored]

13. Pa mor effeithiol fu'r camau hyn yn eich barn chi? [Effeithiol iawn, gweddol effeithiol, ddim yn effeithiol iawn, ddim yn effeithiol o gwbl, ddim yn gwybod]

14. Pa **rwystrau**, os o gwbl, ydych chi'n teimlo sy'n eich atal rhag ymateb yn effeithiol i newid hinsawdd yn eich cymuned? [agored]

15. Pa rai o'r canlynol fyddai'n ddefnyddiol i helpu eich cymuned i ymateb yn effeithiol i newid hinsawdd? [Gwasgwch ar bob un perthnasol: Hyfforddiant, cynhadledd, llawlyfr, cymorth ariannol, arall [rhowch fanylion]…]

16. At ba rai o'r **sefydliadau** hyn fyddech chi'n troi i gael cymorth i fynd i'r afael â newid hinsawdd neu gynaliadwyedd (h.y., rheolaeth gytbwys ar flaenoriaethau cymdeithasol, economaidd ac amgylcheddol)? [Gwasgwch ar bob un perthnasol: Llywodraeth Cymru, awdurdodau lleol, Un Llais Cymru, Asiantaeth yr Amgylchedd, Cynnal Cymru, Llywodraeth y DG, eraill [rhowch fanylion]…]

17. a. Ydych chi'n gwybod am unrhyw enghreifftiau o **arfer da** wrth fynd i'r afael â newid hinsawdd neu gynaliadwyedd ar y lefel gymunedol? [ydw, nac ydw]

b. [Os ydw] Rhowch fanylion byr yma: [agored]

18. a. Yn eich barn chi, a fydd **tymereddau haf** yn eich ardal yn codi, yn gostwng neu'n aros fel y maent erbyn **2080**? [Codi, gostwng, aros fel y maent, ddim yn gwybod]

b. [Os ddewisoch chi codi] O sawl gradd ydych chi'n credu y bydd y tymheredd yn codi, ar gyfartaledd? [1°C, 2 °C, 3 °C, 4 °C, 5 °C, 6 °C, 7 °C, 8 °C, 9 °C, 10 °C]
b. [Os ddewisoch chi gostwng] O sawl gradd ydych chi'n credu y bydd y tymheredd yn gostwng, ar gyfartaledd? [1°C, 2 °C, 3 °C, 4 °C, 5 °C, 6 °C, 7 °C, 8 °C, 9 °C, 10 °C]

19. a. Yn eich barn chi, ydych chi'n credu y bydd **glawiad blynyddol** yn eich ardal yn codi, yn gostwng neu'n aros fel y mae erbyn **2080**? [Codi, gostwng, aros fel y mae, ddim yn gwybod]

b. [Os ddewisoch chi codi] Beth yn eich barn chi fydd y cynnydd mewn glawiad blynyddol, ar gyfartaledd? [10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%]
b. [Os ddewisoch chi gostwng] Beth yn eich barn chi fydd y gostyngiad mewn glawiad blynyddol, ar gyfartaledd? [10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%]

20. a. Yn eich barn chi, a fydd lefel lleol y môr yn codi, yn gostwng neu'n aros fel y mae erbyn **2080**? [Codi, gostwng, aros fel y mae, ddim yn gwybod]

b. [Os ddewisoch chi codi] Beth yn eich barn chi fydd y codiad yn lefel lleol y môr? [5 cm, 10cm, 15cm, 20cm, 25cm, 30cm, 35cm, 40cm, 45cm, 50cm, 55cm, 60cm, 65cm, 70cm, 75cm, 80cm, 85cm, 90cm, 95cm, 100cm neu fwy]
b. [Os ddewisoch chi gostwng] Beth yn eich barn chi fydd y gostyngiad yn lefel lleol y môr? [5 cm, 10cm, 15cm, 20cm, 25cm, 30cm, 35cm, 40cm, 45cm, 50cm, 55cm, 60cm, 65cm, 70cm, 75cm, 80cm, 85cm, 90cm, 95cm, 100cm neu fwy]

Adran 3. Amdanoch chi a lle rydych yn byw

Yn olaf, er mwyn inni allu cymharu barn pobl ac ardaloedd gwahanol, atebwch y cwestiynau canlynol os gwelwch yn dda:

21. Nodwch i ba raddau rydych yn **cytuno neu'n anghytuno** gyda'r datganiadau canlynol: [Cytuno'n gryf, tueddu cytuno, ddim yn cytuno nac yn anghytuno, tueddu anghytuno, anghytuno'n gryf]:
    - Mae'r lle rwyf yn byw ynddo yn wahanol ac unigryw
    - Mae ymdeimlad cryf o berthyn i gymuned yn y lle rwyf yn byw ynddo
    - Mae gofalu am yr amgylchedd yn rhan bwysig o fyw yng Nghymru
    - Mae gofalu am y gymuned yn rhan bwysig o fyw yng Nghymru
    - Mae cefnogi'r economi yn rhan bwysig o fyw yng Nghymru
    - Mae'r tirlun a'r ardal wledig rwyf yn byw ynddi yn bwysig iawn imi
    - Gallaf ddylanwadu ar benderfyniadau sy'n effeithio'r ardal hon
    - Rwyf yn uniaethu'n gryf â'r hyn mae'n ei olygu i fod yn Gymro neu Gymraes
    - Mae ymddwyn mewn ffordd sy'n parchu'r gymuned yn rhan bwysig o bwy ydw i
    - Rwyf yn meddwl am fy hun fel rhywun sy'n rhoi pwys mawr ar faterion amgylcheddol

22. Beth yw eich cod post?

23. Ym mha dref ydych chi'n byw neu pa un yw eich tref agosaf?

24. Nodwch ym mha grŵp oed yr ydych: [16-24; 25-44; 45-64; 65 neu drosodd; gwell gennyf beidio dweud]

25. Ydych chi'n… [Ddyn, menyw, gwell gennyf beidio dweud]

26. Beth yw eich cymhwyster uchaf: [Dim cymwysterau ffurfiol; TGAU/Lefel O, Lefel A/Cymhwyster Uwch/BTEC, galwedigaethol/NVQ, gradd neu gyfatebol, cymhwyster ôl-radd, arall [rhowch fanylion], gwell gennyf beidio dweud]

27. a. Efallai y bydd y tîm ymchwil ym Mhrifysgol Caerdydd eisiau siarad â nifer fechan o bobl a gymerodd ran yn yr arolwg hwn i ofyn rhai cwestiynau ychwanegol am newid hinsawdd. A fyddech yn fodlon cymryd rhan yn y cyfweliadau byr, cyfrinachol hyn? [byddwn, na fyddwn]

    b. Os byddech, a allech roi rhif ffôn a/neu gyfeiriad e-bost ac enw cyswllt:

Diolch yn fawr

Diolch yn fawr iawn am lenwi ein holiadur. Mae eich cymorth gyda'r prosiect hwn wedi bod yn hollbwysig yn ein helpu i ddeall sut mae cynghorau tref a chymuned yn edrych ar faterion amgylcheddol a rhai cysylltiol a sut maen nhw'n delio â nhw, a pha gefnogaeth ychwanegol allai fod yn ddefnyddiol ichi. Byddwn yn bwydo'r wybodaeth hon yn ôl i Lywodraeth Cymru a chaiff ei defnyddio i edrych ar faint mwy o waith sydd ei angen yn y maes hwn.

Bydd pob data a gesglir yn cael ei gadw'n gwbl gyfrinachol.

Os oes gennych unrhyw sylwadau neu ymholiadau am yr ymchwil hwn, cysylltwch â:
Dr Lorraine Whitmarsh,
Ysgol Seicoleg, Adeilad y Tŵr, 70 Park Place, Prifysgol Caerdydd, Caerdydd CF10 3AT
Ffôn: 029 20 874000
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Er mwyn cysylltu ymhellach neu i wneud cwyn, cysylltwch â Phwyllgor Moeseg yr Ysgol Seicoleg:
Ysgrifennydd y Pwyllgor Moeseg, Ysgol Seicoleg, Adeilad y Tŵr, 70 Park Place, Prifysgol Caerdydd, Caerdydd CF10 3AT
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Appendix B: Detailed Literature Review

1. Research on Community Councils' Perceptions of Climate Change Governance

One of the few studies on the experiences and perceptions of community councillors was conducted by Borne in Devon and Cornwall (Borne 2008, 2009, 2010), focusing on education and training[9]. This included issues connected with sustainability and climate change[10]. In the final report (Borne 2010) highlights perceived gaps and made the following observations pointing to more education and training on climate change-related issues:

a) Additional education and training for parish councillors are needed.
b) The requirements for education and training are diverse and imply specific skills sets for councillors to operate effectively for their parishes.
c) Parish councillors feel that their skills are not always recognised and put to good use.
d) '*There is an overwhelming feeling that there is a need to encourage sustainable communities 'but' there is confusion over the action that should be taken to achieve these goals*' (p.8).
e) '*Sustainable development was seen as an important concept but was not well understood. Greater understanding is needed of how these issues are integrated into the planning system with a particular reference to sustainable development mechanisms*' (p.9).
f) There exists a lack of awareness concerning existing mechanisms within local governance that could help create sustainable communities.
g) The relationship between town and parish councils was viewed as important and should be made stronger.
h) Councillors were concerned about global risks (e.g. global warming) on their communities but it was felt that more needed to be done to communicate these issues effectively.

In light of these observations, further training and education were clearly needed. Borne recommends a range of areas where training should be targeted:

a) Basic principles of sustainable development.
b) Broader issues of governance.
c) Basic principles of climate change.
d) Global environmental risk.
e) Interconnections between global policy and local implementation.

In another study, Kambites (2010) conducted a study investigating local town and community councillors' attitudes towards sustainability and their role as councillors in this context. A summary of the findings follows:

a) Local councillors saw their communities as '*living organisms*', whose interests they represent with the benefit of local knowledge and holistic thinking.
b) Councillors used this discourse to establish and justify their legitimacy as advocates of the community.
c) This set up an antagonism between the perceived local knowledge and holistic thinking of community councillors on the one hand, and a lack of local knowledge and compartmentalised thinking on the part of higher level government on the other.

[9] For Gregory Borne's website devoted to parish council issues and sustainability, though it appears to go to www.sustainableparish.com.
[10] For Gregory Borne's blog site go to http://developmentalpathways.blogspot.co.uk/.

d) The sense of legitimacy as community advocate made it difficult for community councillors to take a leadership role on broader concerns that may not be favoured by the community. This could lead to such issues being downplayed or neglected.
e) An image of the parish as vulnerable organism served to divert attention away from broader sustainability-related issues. Even if councillors were enthusiastic about sustainability tended to prioritise the local over the global and the short-term over the long-term.
f) Councillor's emphasised local knowledge and a distrust of outside expertise.

Kambites argues that the perceptions of councillors could potentially obstruct sustainability initiatives. She concludes that community councils are in an ideal position to spearhead community initiatives on climate change provided the current sense of localism and short-termism can be challenged, in tandem with sympathy towards the sustainability agenda and the belief in its promotion as part of their role.

An increase in the powers and profile of community and town councils could improve their relations with higher levels of government, as this would help them be taken more seriously and because it might help remove the need to legitimise their role by denigrating higher government.

More specifically, community and town councils could be given a specific responsibility to consult with local groups and individuals and to draw up a local sustainability plan for their parish. This would help community councils lead the way for their communities through creating a holistic vision of local sustainability, including the global and long-term effects of local action.

Other research suggests that the image of community councils held by other agents such as higher tiers of government or the communities they serve may also function as an obstacle to progress.

Anderson (2008) looked at relationships between community and local councils in local planning, concluding that points of tension exist in the following areas:

- The nature of democracy within the hierarchical systems of governance.
- Legitimacy of local knowledge.
- Perceived interests and values of the planning system as they are practised.

Of particular salience to this review is point 2 (above). In the planning context of the study, whilst it was acknowledged that local knowledge was used by higher government in some instances; in others the ontological and epistemological grounds were narrowed to privilege scientific and technical knowledge over alternatives to benefit planning interests.

The local knowledge of community councillors is recognised as important but *different*' in that it is framed by a local context, typically gained by living in an area and experiencing it first-hand, what may be referred to as '*casual empiricism*' (Anderson 2008), which can be beyond the awareness of, and hence valued by those at the extra-local scale.

In contrast, community councillors' knowledge is also seen as different in ways that *devalue* it on the basis of a personalised and emotional connection to their community that affects their ability to make appropriate judgements. Those at the local level are reluctant to translate their values in accordance with the requirements of the system, which marginalises legitimate interests, values and knowledge. Meanwhile, higher government is frustrated by the inability of local interests to frame their arguments within the established epistemological boundaries. This leads to each council tier '*talking to the hand*' of the other.

Meanwhile, Demeritt & Langdon (2004) remark that the lowest tiers of government sometimes have problems understanding and assessing official sources of climate change information,

entailing that responses at the local level may be incommensurate with the content of official information sources.

Meanwhile, Charnock (2007) reprises an image of community councils as excessively parochial to the point of narrow-mindedness and preoccupied with mundane issues rather than sustainability and climate change. Charnock was at the forefront of the Ashton Hayes (Cheshire) initiative to become the first carbon neutral village in England. In his commentary he remarks that he was reluctant to approach the parish council for assistance with the initiative because he believed they would take some convincing as sustainability and climate change were subordinate to more routine matters played out in front of small, sleepy audiences; '*climate change was not something that had worried them up to now*'.

2. Community Councils and Action on Sustainability and Climate Change

There exists a large volume of literature detailing a plethora of community initiatives on climate change and sustainability. These offer examples by which community projects may be better understood, especially with references to opportunities and barriers to implementation. Some of these are discussed below.

Borne (2010) makes it clear that improved education and training are not panaceas for behavioural change on a given issue and identifies a range of factors that need to be considered in community level governance:

- Community identity.
- Global risk salience.
- Broader engagement.
- Discrepancy between global and local priorities.
- Local protectionism.
- Internal political tensions.

Such factors point to a need to recognise political structures, and community and broader contexts in order to better comprehend local governance (see below).

Preston, White, Lloyd-Price & Anderson (2009) conducted a review of 'best practice' community initiatives on climate change with a focus on energy and carbon reduction schemes as opposed to wider initiatives (e.g. waste reduction and recycling, sustainable transport, local food initiatives, etc.). They sought to examine engagement models and delivery tools employed by successful community climate action projects, thereby gaining an insight into critical success factors underpinning the successful initiatives.

Whilst the focus of the review was not solely directed at community council initiatives (other tiers of local government were included), they offer a number of salient points for community council initiatives:

a) There exists a potential for community-led climate change initiatives to reduce GHG emissions and normalise pro-environmental behaviours.
b) Despite considerable diversity in initiatives, most were initiated by one individual who first engaged their peers to form a central nucleus with an aligned goal. This group then engages other local community groups and political decision makers. These groups contain '*mavens*'[11] that generate further interest and community support for the group. Initiatives then enter a phase of wider consultation and action planning via surveys, events and workshops.

[11] Malcolm Gladwell used the term in his book 'The Tipping Point' (Gladwell, 2000) to describe individual information gatherers who are typically the first to pick up on new trends

c) Successful groups move from action planning to deployment measures, a move that community groups often find difficulty with. Groups often identified the role of external support and a core team of committed individuals as key components of successfully making this transition.
d) Maintaining focus and engaging the community is critical for success.
e) Community led initiatives are reliant on volunteer time, which can be difficult for those with full time jobs. Successful initiatives are often the result of high levels of energy and enthusiasm amongst volunteers, which can diminish over time. Recruitment of additional volunteers (particularly leadership roles) can mitigate loss of volunteers and brings new ideas that may come from new volunteers.
f) Build on people's strengths: identifying people's skills and interests helps to enable them to do what they are good at and maintains interest and motivation for the cause, whilst maximising resources.
g) Establishing a community group can take time and it is important to build on any successes and milestones achieved to demonstrate to volunteers and the wider public the impact of the group's efforts.
h) People are more likely to trust and listen to their neighbours than those at a higher level, making community-led projects more successful.
i) It is important to be sensitive to different attitudes, motivations, understanding, tolerances and capacities of individuals within the community in order to inspire change.
j) A few of the community groups interviewed were finalists in 'The Big Green Challenge', noting the added value of financial support coupled with advisory support.
k) One community group identified an issue in having to contact relevant local authority departments, both in terms of fitting in with working hours and having to contact departments separately. Suggested that a 'carbon ambassador' in local authorities could see community groups out of hours and provide a single point of contact for all climate change related issues.

The above suggest a range of ways that community councils could focus their energies on community-level climate change initiatives. Preston et al. (2009) also recommend a number of points to the important end of planning activities and monitoring achievements:

a) Create an action plan by establishing group aims, delivery (including timescales and allocating responsibilities)
b) Streamline activities: e.g. groups with wider agendas can benefit from establishing themed working groups
c) Provide a physical focal point: e.g. a well-known building or renewables on community buildings to help with awareness.
d) Monitoring impact: tangible outputs can assist with funding
e) Follow-through: ensuring active volunteers and the passive community are aware of the impacts of any action taken.

In a previous study, Borne (2009) identifies other additional factors that need to be considered by community councils when designing energy-related sustainability initiatives:

a) *Energy literacy and visibility*: More information or visibility of energy related issues (e.g. wind turbines) does not necessarily translate into effective behaviour change at community or individual level. The complex relationships between the community and its surroundings need to be explored.
b) *Transformative innovation, lifestyles and social technical practices*: Patterns of energy use in different arenas of people's lives (e.g. work, leisure, and transportation) need to be examined individually and collectively to expose the locked behaviour patterns and discourses that lead to unsustainable energy practices.
c) *Communities, ownership and social movements*: If initiatives are not '*owned*' at the local and community level success is unlikely. Community councils can be used to address issues of ownership and the nature of community itself and challenge established and

geographically bound interpretations of communities, exploring the notion of communities of interest and the relationship this has to associated practice.

d) *Policy, legislation and governance*: Employing community councils to understand relationships between community and energy use involves issues of policy, legislation and governance. The lowest tier of local government is embedded in the wider policy and governance process of local authorities and national government. The effectiveness of initiatives and legislative prescription can therefore be assessed using community councils.

More generally, Borne (2012) emphasises the following points and their importance to successful community governance:

a) Identity: In an ever more globalised and fragmented world evidence suggests the need for community identity. This can be used to build momentum for the responsible, effective and efficient use of resources within the community.
b) Efficiency: Services are better provided to the local community by using town and parish councils, consequentially creating more sustainable communities.
c) Relevance: Community governance is viewed as relevant to the local community and able to prioritise the right issues for communities.
d) Opportunity: Community councils can draw on multiple resources as mechanisms for improving local communities.

The DEFRA document '*Parish and Town Councils-Act on CO2. Ways to Tackle Climate Change*' (DEFRA 2007) recognises the potential of community councils, with detailed local knowledge, to identify suitable initiatives at the community level. It also summarises some existing projects undertaken by the community or parish (e.g. Tatworth and Forton parish councils' footpath lighting initiative funded by EDF Energy[12], reducing carbon emissions in community owned buildings such as Gamblesby village hall[13] and the production of Parish Plans in Lowca, Moresby and Parton in Cumbria[14].

The DEFRA document lists a number of ways that community councils can help promote action including nominating a community 'energy champion', organising events such as energy meetings or fun days that communicate positivity and communicating that local people's actions are important, dispelling myths about climate change, relating climate change to the community, using a variety of learning methods to get the message across, networking with local environmental groups and creating associations between the community and the things or people they admire and care about.

They also list supporting organisations for community councils. Community partnerships are critical to the success of initiatives, e.g. offering funding, support and knowledge:

a) *'Action for Communities in Rural England'* (ACRE) was set up to promote sustainability in rural communities and also acts as an umbrella organisation for 38 Rural Community Councils (RCCs) in England[15].
b) The '*Community Action for Energy*' (CAfE) initiative from the Energy Saving Trust promotes ways of energy saving, at work, at home and in the car. It also supports local community-based energy projects. Parish councils can keep up to date with news, funding opportunities and training sessions[16].
c) DEFRA also has an information website for sustainability initiatives in *community halls*[17].

[12] www.britastro.org/dark-skies/awards.htm
[13] www.portal.est.org.uk/uploads/documents/cafe/cafe%20case%20study%2022.pdf
[14] www.ruralcommunities.gov.uk/files/Parish%20Plans%20Case%20Studies.pdf
[15] www.acre.org.uk
[16] www.energysavingtrust.org.uk/
[17] www.defra.gov.uk/rural/communities/halls

d) DEFRA's parish planning website contains information about parish planning and other local action planning processes[18].
e) '*Every Action Counts*' is an initiative supported by DEFRA and managed by a group of voluntary and community sector organisations to help communities take environmental action[19].
f) The *Improvement and Development Agency* (IDEA) highlights case studies from councils that use energy efficiency, mitigation and adaptation action plans to tackle the effects of climate change[20].
g) The *'Nottingham Declaration*' on climate change local authorities indicates commitment to sustainability. Groups can sign up to tackle climate change in their area and work with others to reduce GHG emissions. An Action Pack gives guidance to create an Action Plan, and advises how local authorities can reduce emissions and adapt to climate change[21].
h) The *Tree Council* runs a '*Tree Warden Scheme*' across the UK to help people become more active role in conserving and enhancing their local trees and woods[22].

Capener & Cranidge (2008) have developed guidance and a toolkit for the Energy Saving Trust (EST) to support advice centres in delivering two key outputs; a carbon reduction plan and community led action plan for future activity. Adams & Berry (2008) provide snapshots of a range of community energy projects, some of which involve community council participation and act as exemplars of good practice. The case study on Ashton Hayes going for carbon neutral status is one example of a community council led project[23]. Ashton Hayes is a rural village located just outside Chester that aims is to become the first carbon neutral village in England through energy efficiency measures and carbon offsetting.

Further to this, Alexander, Hope & Degg (2007) conducted a case study focusing on Ashton Hayes parish council. Since its inception in 2005 the project has expanded and engaged a significant proportion of village residents, and producing a number of impacts on the community.

Their study describes the process of project development and implementation and draws some general conclusions before considering some of the findings. They conclude that the success of the project is due to:

a) The commitment of volunteers and their ability to multi-task (sponsorship, media profile, community participation). It is commonly found that that most people are attracted to short-term action based roles rather than sustained participation in such initiatives.
b) Aims have meshed with wider political agendas, creating a kind of multi-agency partnership bridging lower and higher tiers of government, as well as commercial and community agents.

As mentioned above, community councils have an important role to play in relation to the above, by occupying the space between the community and the political sphere.

In September 2007 Friends of the Earth undertook a survey of community climate change action in the south west region and noted the following factors salient to the workings of community councils (Friends of the Earth 2007):

a) Rapid growth in number of community groups acting on climate change.

[18] www.defra.gov.uk/rural/communities/parish-planning.htm
[19] www.everyactioncounts.org.uk
[20] www.idea.gov.uk
[21] www.est.org.uk/housingbuildings/localauthorities/NottinghamDeclaration
[22] www.treecouncil.org.uk
[23] www.goingcarbonneutral.co.uk

b) Diverse types of groups are tackling climate change, not just environmentalists (faith groups, social justice groups and other organisations).
c) Ways of working included most commonly awareness events, followed by personal behaviour change and lobbying for changes to local policy.
d) Barriers included getting funding, influencing policy and recruitment of members.
e) Most useful types of community workshops were related to influencing policy and getting funding.

In another review of community action on climate change (South West Wildlife Trusts 2008) work sought to investigate the nature of climate change community groups in the South West, together with some initial details followed up with more detailed examination. The following recommendations were made for community level governance:

a) Help community groups be more effective: develop and promote a menu of simple, replicable models, including support materials. Recognise and support the contribution of key volunteers. Provide a paid support person at county level.
b) Help community groups measure their impact: Develop a broad monitoring framework, which makes it easy for volunteers and community groups to monitor what they do.
c) Simplify communication: Improve and simplify communication channels, especially via the internet. Support county networking, with a one stop shop for help and information as well as occasional networking events.
d) Provide funding and support: Make sure climate change groups know how to access existing funding and support. Provide new funding for county networking and development of joint initiatives. Explore potential for a Lottery Climate Change Fund.
e) Take forward regionally: Support the delivery of these recommendations through the regional climate change action plan. Involve mass membership organisations. Start to develop an alternative low carbon vision.

Rogers, Simmons, Convery & Weatherall (2008) note that whilst studies have reported that community-based renewable energy projects are more likely to be accepted by communities than top-down development of large-scale schemes, little research has examined public expectations of how people would want to participate in such projects and why. Examining one rural community's response to a proposed sustainable energy project in Thirlmere, there was high support for local generation and use of renewable energy. However, desire for active involvement was low and the community positioned themselves more as consultees (low participation) rather than leading (high participation).

The authors propose that community initiatives to address climate change require a '*trusted resource base*' with proficiency in both community development and technical knowledge. Support in co-ordinating and directing a project would be useful to guide communities interested in sustainable energy issues but lacking the skills and experience, confidence or time to develop a project independently. Greater institutional support from organisations such as community councils will be required to assist both projects and participation.

Strohm (2011) conducted a literature review to identify best practices for promoting energy efficient behaviour at the community level. Strohm makes a number of recommendations for strategies that could be employed by community councils in recruiting for climate change action:

a) Spend time studying the target community.
b) Recruitment into community energy programs is enhanced by exploiting existing community networks.
c) Existing social institutions can also be used as the basis for recruiting members of the community.
d) Enthusiastic members of the community can be used to motivate others who take a more minimal role.

In another study, Reeves, Lemon & Cook (2012) examine local support for community action on climate change from the '*Communities Cutting Carbon Project*'. The project is designed to support communities acting on climate change in the Leicester area. It was found that:

a) Action on climate change can be stimulated by drawing upon broader values and motivations. Climate change may not be the main motivation.
b) Readily available funding will motivate local community groups to undertake projects.
c) Offering funding as an incentive has also made it easier to secure participation from volunteers from communities involved in projects.
d) Regular contact with community governance partners is beneficial, enabling groups to participate in local authority events and efficiently access information from local authority contacts.

Borne (2010) indicates areas in the current policy environment where interventions can exploit the following drivers:

a) Localisation: For intervention design, commissioning and delivery.
b) Personalisation: Allowing further scope for tailored services.
c) Collaboration: Loosening of organisational boundaries, with scope for more integrated service delivery, often with a focus on place.
d) Open access: Greater opportunities for new service providers to enter the market from outside the statutory sector
e) Volunteering: Involve local people and organisations in service planning and delivery
f) Growth: Emphasise factors that meet economic and housing needs.

The studies cited relate the wide variety of ways in which climate change initiatives might be tailored, the majority of which fall within the remit of community councils, or offer novel support roles for this tier of government. We now move on to consider some of the barriers to community council action on climate change.

3. Perceived Obstacles to Community Council Action on Climate Change

In a Swedish study, Storbjörk (2007) found that the process of determining the *nature* of flood risk profoundly affects the way that responsibilities for acting on the potential impacts of climate change are attributed. Taking into consideration two case studies they report that a lack of uniform definition of flood risk and acceptable risk levels had created problems over who was responsible for decision-making, which has obstructed local climate change policy. Moreover, such heterogeneity is yet to be acknowledged and tackled. As Allman et al. (2004) note, lack of appropriate, consensual guidance from local government can prove an obstacle to action.

Storbjork (2007**)** also reports that in the UK there remains culture of apathy within local authorities. For example, Storbjork draws on research relating that 68% of local authorities had not considered the effects of climate change and only 4% had developed strategies trying to address them. One way of addressing this would be to reformulate climate change into a local issue, in which the local and personal consequences are emphasised, thereby potentially increasing incentives to act.

Borne **(**2010) also highlights a range of barriers to community level governance:

a) A parish's history and heritage.
b) The composition of its population.
c) The engagement or place attachment of that space.
d) The geography of the community (e.g. scattered and isolated communities as a barrier to effective local governance).
e) Failure of communication and support from principal authorities.
f) Time: parish council level of government represents a volunteer's commitment that means time away from other activities.

g) Administrative confusion and ability to deliver services.

In response, Borne (2010) makes the following recommendations:

a) Broaden communication lines between the community council and the principal authority.
b) Provide relevant and focused information.
c) Be aware of differences at different levels but also be balanced in approach and facilitate effective governance structures.
d) Be sensitive to the differing backgrounds heritages and relationships that exist at the parish level.
e) Foster a strong community identity.
f) Establish leadership within the community council with an emphasis on the important role of 'community clerk'
g) Build strong relationships with statutory service providers

Other studies have found that the way that climate change is prioritised in relation to other social and economic concerns may also affect action. For community councils urging action on climate change they are also competing with other pressing local issues. These conflicts may be particularly strong in socially and economically deprived areas, as has been documented in the global South where officials must confront issues of poverty and unemployment as well as more traditional local environmental concerns such as air and water quality (e.g. Holgate 2007). So would attempts to reframe global issues such as climate change as local ones provide communities with more of an incentive? Some studies have suggested that climate change issues may be well down the community agenda and that, rather than being central to initiatives, such gains are a potentially positive by-product of initiatives aimed at addressing other local issues and problems (Bulkely and Betsill, 2003). Similarly, Bulkeley & Betsill's (2003) study of local climate protection in Australia, the UK and the US found that the presence of *political champions*, access to *financial resources*, and local government competencies and support, as well as framing issues as local were key factors affecting the extent to which the political rhetoric of climate policy was translated into local realities. Von Seht (2002) also comments that in the field of climate policies, there is a huge potential for local measures that are socioeconomically attractive to local communities.

Argyriou, Fleming & Wright (2012) examined the barriers faced by local government in the UK in developing and implementing climate change policy initiatives. They found engaging with the wider community particularly problematic and suggest the following recommendations to tackle climate change initiatives at the local level:

- Experienced leadership.
- Cross departmental collaboration.
- Critical mass of personnel.

Dierwechter (2010) and Glaeser (2009) discuss the 'local divide'. These suggest that it is simpler for more local governance agencies to make greater strides in carbon reduction strategies within dense urban environments than in low-density suburbs where residents tend to leave a greater carbon footprint. In some suburban contexts, interventions will involve greater behavioural changes and transaction costs on the part of the community, meaning less likelihood of voluntary behaviour change. Therefore, community councils may be more aware of tensions, raising implications for more blanket interventions.

Moser & Ekstrom (2010) offer a systematic framework to identify barriers that might impede the process of adaptation to climate change. This takes account of three elements, including

interconnected structural elements comprising actors and the wider structures in which they function (including governance).[24]

Marshall, Park, Adger, Brown & Howden (2012) have authored a paper describing the experiences of an Australian agricultural community faced by change, examining influences of identify and place on their choices. This is an emerging area of work in the climate change adaptation arena, which is proving to be very relevant in terms of factors underpinning decision-making. They took four foundational measures to measure transformational capacity:

- The management of risk and uncertainty.
- The extent of planning, learning and reorganizing skills
- The extent of financial and psychological flexibility to undertake change
- General willingness to undertake change.

The results show that sense of occupational identity and place attachment were negatively correlated with transformational capacity, suggesting that they are important factors that may impede change. Community councils are advised to take account of people's sense place attachment for sustainability initiatives.

Glaas, E., Jonsson, A., Hjerpe, M. & Andersson-Sköld (2010) add that climate change initiatives are often characterised by limited co-operation between partners, affecting co-ordination of initiatives and a lack of methods for building institutional knowledge.

Preston et al. (2009) also mention a number of barriers:

- Perseverance and patience: processes typically take some time longer or involve different challenges than anticipated. However, usually another group has faced and overcome such challenges highlighting the importance of groups sharing experiences and knowledge.
- Funding: significant volunteer time has to be given to sourcing funding and the application process is often complex and time-consuming adding to pressures on already limited volunteer time.
- Institutional and bureaucratic barriers: efforts of community groups could be better spent than on form filling and box ticking, putting added pressure on volunteer time and sending the wrong message to communities, where their energy and motivation should be recognised and rewarded for the asset that it is. Need for readily available external support with procedures such as planning and funding applications.

4. Lessons from Other Climate Change and Sustainability Initiatives

Rhodri Thomas comments that through working with One Voice Wales on Strong Roots for some time and having written case studies and delivered training for councillors on sustainable development, his experience supports the idea that councillors do not think explicitly about climate change. Rather, they think about issues that are related but '*embedded in practical realities*'.

The document, '*Strong Roots Case Studies*' (Cynnal Cymru 2012) details case studies on land and biodiversity management. Whilst it appears there is a considerable enthusiasm for managing local environments, Rhodri Thomas believes that the practical benefits of action should be emphasised in generating support from the community. For example, the document describes case studies in which local community groups have dealt with invasive species (e.g. St Dogmaels have made considerable efforts to deal with Himalayan Balsam and Japanese Knotweed).

[24] http://www.susannemoser.com/publications.adaptation.php

Framing it as a climate change problem may potentially affect the community's willingness to act (e.g. if it were suggested that climate change might exacerbate the problem).

Cardiff council has developed community resilience plans[25] for events such as extreme weather. The plans help to guide individuals and communities to coordinate and plan, to add to support coming from within the community. By being prepared, individuals and communities can respond effectively to and recover swiftly from emergencies. People are encouraged to build on existing networks of support using local knowledge, by referring to guidance set out on the council website. Resources include a household plan template, the document 'Preparing for Emergencies-A Guide for Communities' and other sources of information on the web. By building on existing local relationships and networks, using local knowledge and preparing for risks, your community will be better able to cope during and after an emergency.

The United Kingdom Climate Impacts Programme (UKCIP) offers a portfolio of tools for coping with climate risks[26]. The range includes 'AdOpt' (climate risk adaptation), and LCLIP (Local Climate Impacts Profile), a risk assessment tool for local authorities.

They also list a range of case studies, mostly at county or regional level, but including their work with Gloucestershire Rural Community Council. UKCIP supports people aged over 50 in rural areas of Gloucestershire, providing a link between local community and statutory and voluntary agencies that serve them, including emergency planning for weather events. During the 2007 agents helped ensure that food supplies were reaching the community, as well as raising awareness and understanding of associated health issues and identifying location of useful premises such as launderettes.

The Resilience Alliance[27] is currently conducting a 3-5 year research programme into urban resilience and has produced an *urban resilience research prospectus*. Their research programme focuses on the interconnected themes of *governance networks*, metabolic flows, social dynamics and built environment. They comment that local, regional and international networks of governance are required for sustainable management of urban landscapes and need to be better understood.

Tompkins, Adger, Boyd, Nicholson-Cole, Weatherhead, & Arnell (2010) compiled a database of climate change adaptations in response to actual changes in weather and to perceived risks. They evaluate whether these examples are a vanguard of best practice that may diffuse across the society. Responses range from small scale adjustments to large-scale systemic change in public and private organisations in a range of sectors. Tompkins et al. state that government agency-led adaptation planning has been responsible for a range of low-cost actions in infrastructure planning across various sectors in the UK. However, there is little evidence of climate change adaptation initiatives trickling down to local government level. This suggests that community councils may be marginalised by higher levels of government and potentially lack the necessary resources to act effectively on climate change.

Furthermore, Shaw (2012) notes that community councils are not adequately resourced or powered, creating barriers, and have to enhance their approaches to overcome the limitations imposed. Shaw highlights a number of examples where local governments and the local communities have had to overcome such barriers by using the limited resources at their disposal.

In a recent '*Cardiff Business School and BRASS Consortium Report: Flood Awareness Wales Phase 3 Final Evaluation*' report for Environment Agency Wales (May 2012) a summary of recommendations on community flood planning is offered, with implications for community councils:

[25] http://www.cardiff.gov.uk/content.asp?nav=2%2C2870%2C3141%2C6394
[26] http://www.ukcip.org.uk/
[27] http://www.resalliance.org/index.php/urbanresilience

a) Is there a 'best practice' for community flood planning?
b) Intelligence on the implementation of the community flood planning process should be collated in a formal report.
c) Community flood plans should contain structures for self-refreshment by communities which do not require Environment Agency interventions.
d) Plans may also benefit from having a statement of flood risk in them which might include flood history where relevant.
e) Research should work to identify if there are any community patterns which favour changes in behaviour more formally.
f) More research should be focused on 'difficult to reach' (possibly poorer) communities and areas.
g) There may be merit in the development of a formal pilot project on individualised flood risk planning.

The points listed above indicate areas where community council support and expertise could be used to contribute to a better understanding and implementation of flood planning, whilst acknowledging the tension between more comprehensive and more individually tailored climate change policies. A further excerpt from the report suggests the diversity and uniqueness of communities and the need for more tailored approaches, both of which fall within the potential remit of expertise by community councils, which are the closest level of government to these communities:

5.3.8: '*Communities are a different matter. They are highly variable in terms of the flood risk they face and their attitudes to flood risk, their collective flood awareness, their sense of tight knittedness, the ease with which willing individuals prepared to take responsibility can be identified, their size, their complexity and their flood history. Not only do they take a long time to penetrate and convince but there is a deal of variability with regard to how much responsibility individuals within the community are prepared to accept*.'

Environment Agency Wales also make the point that there is a trade-off for individuals between the time and resources required to act on flood risk and the outcomes of taking action. Community councils could also have a part to play in the collation of the following key factors linked to the above, which depend upon various forms of local knowledge:

a) The perceived likelihood of flooding.
b) The perceived ability to respond to the threat of flooding.
c) The perceived impact of flooding.
d) The willingness to take ownership of the risk.
e) The cohesiveness of the local community.

In addition to providing information on these factors, community councils could also have a part to play in the design and delivery of tailored communications pertaining to flood risk because of their specialist knowledge of the community and local geography. (see also DEFRA (2010); '*Adapting to climate change: A guide for local councils*', which also cites case studies detailing successful community council projects[28].

Allman, Fleming & Wallace (2004) chart the progress of local authorities in England and Wales in response to the threat of climate change. They paid particular attention to 'successful' authorities and compared them with others. They comment that at the time the majority of local authorities were not making significant progress, with the exception of some single issue areas (e.g. green electricity in which one department is involved in decision-making). Complex decision-making processes involving the cooperation of different departments showed little progress. However,

[28] http://archive.defra.gov.uk/environment/climate/action/documents/adapt-localcouncilguide.pdf

some had developed a range of strategies aimed at reducing GHG emissions. Their success was explained as being due to three factors:

a) Recognition of the secondary benefits of tackling climate change by council staff (e.g. potential employment, increased quality of life, reduction of fuel poverty).
b) Strong political, professional and technical support necessary to champion climate change action.
c) Creating partnerships with utilities, private, public and voluntary groups to raise funding to implement measures to adapt to climate change and reduce GHG emissions.

Wilson (2006) states that Spatial planning at a local level has a critical anticipatory role to play in promoting robust adaptation. In investigating local authorities' and planners' policies for climate change adaptation in the UK the study shows that, while the issue of climate change is becoming recognized with respect to flood risk, the wider implications (e.g. for biodiversity and water resources) are not yet integrated into plans. The reasons for this lie in lack of political support and lack of engagement of the planning profession with climate change networks. But the paper also argues there are difficulties in acknowledging the need for adaptation at the local level, with the short-term horizons of local plans at odds with perceptions of the long-term implications of climate change.

Bulkeley (2010) makes the point that climate change governance is always contextual, paying particular attention to processes of power within multilevel governance. She concludes that political networks are crucial to understanding responses to climate change responses, Therefore, analyses that investigate the operations of power across multiple levels of governance offer new insights and suggestions for reconfiguring climate change governance.

Bulkeley & Betsil (2005) make the point that climate change governance can transcend the boundaries imposed by multilevel governance. Examining climate change governance in the context of planning issues in Newcastle upon Tyne and Cambridgeshire, they conclude that the interpretation and implementation of sustainability are constructed by the structures of governance that often transcend the geographical boundaries of the community. This has implications in terms of the responsibilities of community councils and their links to other levels of governance beyond these boundaries, challenging traditional distinctions between local levels of governance and beyond. Therefore, in this sense, ideas about what is 'local' are questioned and reconfigured.

Baker, Peterson, Brown & McAlpine (2012) evaluated several local climate change schemes in Australia, finding that local governments were not addressing climate change effectively. They concluded that whilst local governments were aware of climate change impacts they did not develop adequate responses, challenging the notion of devolving climate adaptation planning to local governments. One of the main issues was that local governments failed to engage meaningfully in public participation programmes when developing action plans for climate change adaptation.

Trier & Maiboroda (2009) undertook a study in the village of Belstone, Devon, exploring avenues to sustainable living as part of the '*Green Living Project*'. Whilst the initiative was judged to be successful, a significant proportion of people living in the village did not identify with '*greenness*' and '*green living*', which was chosen because it was considered easier for the community to relate to than '*sustainable*'. Such instances communicate the need for a greater sensitivity to the local community context, in which particular terms can carry rather different meanings than they do for the agencies that coin them. Community councils would prove useful in their local knowledge and would be more sensitive to local contexts of meaning as well as being able to gauge community responses and recommend actions. In the study of Belstone, locals felt that whilst adopting more sustainable behaviours was important, the communications they received appealed only to a minority. Clearly, the way that a project is named can have profound implications on levels of community identification and engagement. In contrast, a local steering

committee might be better suited to suggesting more locally acceptable terms that could then be chosen locally, impressing upon the community their ownership of the project from the start.

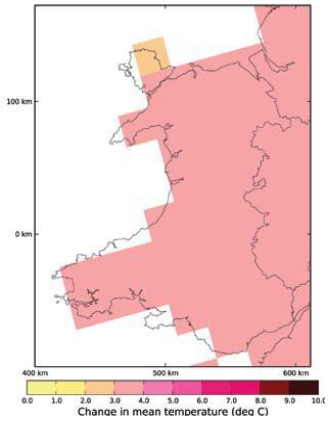
Appendix C: UKCP09 Projections for Wales

The UK Climate Projections (UKCP09) are the fifth generation of UK climate change scenarios, describing how the climate of the UK might change during the 21st Century. The climate model impacts have been developed by the Met Office Hadley Centre with a partnership of organisations (including UKCIP and the Welsh Assembly Government) involved in developing tools and guidance to support the use of the projections.

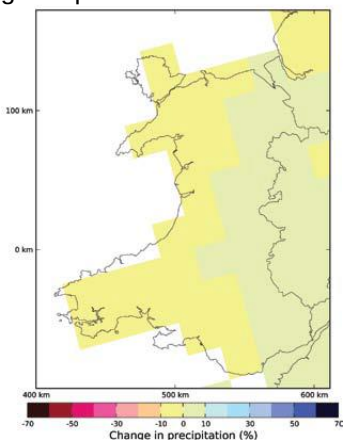
The projections show a probabilistic view of what will happen based on high, medium and low greenhouse gas emissions scenarios for the future, taken from those developed by the Intergovernmental Panel on Climate Change.
Current research suggests that we are currently tracking towards the "medium "emissions scenario. This is the assumption used in the graphics that follow.

The following two graphics show what is available, as taken from Welsh Government's November 2009 Document "Climate Change: It's Impact for Wales". Source: http://wales.gov.uk/docs/desh/policy/091101climateimpactsen.pdf

a) The change in annual average temperatures in °C from the 1961-1990 baseline for the 2080s (for 25km grid squares for the central estimate of the medium emissions scenario).



b) The % change in annual average rainfall from the 19611990 baseline for the 2080s (for 25km grid squares for the central estimate of the medium emissions scenario).



c) Sea Level Change (Cms) by 2080

	London			Cardiff			Edinburgh			Belfast		
	High	Med	Low	High	Med	Low	High	Med	Low	High	Med	Low
2000	3.5	3.0	2.5	3.5	2.9	2.5	2.2	1.6	1.2	2.3	1.7	1.3
2010	7.3	6.2	5.3	7.3	6.2	5.3	4.7	3.5	2.6	4.9	3.8	2.8
2020	11.5	9.7	8.2	11.5	9.7	8.2	7.5	5.7	4.3	7.8	6.0	4.6
2030	16.0	13.5	11.4	15.9	13.4	11.4	10.7	8.2	6.1	11.1	8.6	6.6
2040	20.8	17.5	14.8	20.8	17.5	14.8	14.2	10.9	8.2	14.7	11.4	8.7
2050	25.8	21.8	18.4	25.9	21.8	18.4	18.0	13.9	10.5	18.6	14.5	11.1
2060	31.4	26.3	22.2	31.4	26.3	22.2	22.1	17.1	13.0	22.9	17.8	13.7
2070	37.2	31.2	26.3	37.1	31.1	26.3	26.6	20.6	15.7	27.4	21.4	16.5
2080	43.3	36.3	30.5	43.3	36.2	30.5	31.4	24.4	18.6	32.3	25.3	19.6
2090	49.7	41.6	35.0	49.7	41.6	35.0	36.5	28.4	21.8	37.6	29.4	22.8
2095	53.1	44.4	37.3	53.1	44.4	37.3	39.2	30.5	23.4	40.3	31.6	24.5

Table of decadal sea-level rise projections (in cm) relative to 1990 levels. For our comparisons, we use the 2080 medium-emissions scenario for Cardiff (approx. 36 cm). (From http://ukclimateprojections.defra.gov.uk/21729)

Appendix D: Open Survey Responses

C.1 What do you see as being the main issues or challenges facing your community over the coming year?

- Suitable and appropriate arrangements to deal with excess surface water. Adequate control over quarry blasting and noise/vibration nuisance arising from quarrying activities.
- Flooding
- Cost of transport. Cost of energy in the home. Retention of local services/facilities
- Rising fuel prices and environmental impact of private transport will mean that more people will need to rely on public transport, which is currently inadequate. / Rising cost of food and environmental impact of production and delivery of foodstuffs will need greater support for local producers. / Inappropriate development will exacerbate flooding problems as rainfall is predicted to increase.
- The rising price of fuel, both for domestic use and commercial use in our rural area, as everything we use or eat has to be delivered.
- Understanding what the changes are and then adapting to the challenges to maintain community resillience. will need plenty of inovation and thinking outside the box.
- The attitude that it's someone else's responsibility, the national or local gov, but not the individual / Local resilience, as we rely on international supply chains which could lead to shortages of food, fuel and energy in the near future. In NE Wales there is particularly a lack of locally produced fruit and veg which could be relatively easily improved with local action. Better use of public procurement to improve the local economy - school meals made with as much locally sourced food as possible / Behavioural change to reduce energy consumption and our carbon emissions, coupled with incentives to reward people who take action / Living within our allocation of the planet's resources and recycling / re-using wisely. Waste electrical products need to be collected and distributed nationally before tenders for recycling start (like Germany and Italy) / Better use of farm-scale AD to supply villages with electricity and hot water through district heating / Central sub-regional pasteurisation plants for food waste and dog waste as feed stocks for AD / Better, cheaper public transport to help people out of their car dependency / Flooding - plant more trees, have green areas in towns, use bigger interceptors under car parks and have bigger permeable buffers around. Don't build on flood plains and keep ditches and drains cleared out / Drought - better use of stored water and understanding amongst residents, subsidised water butts etc
- Traffic/congestion / Flooding / Poor waste management
- regeneration of the town sea front
- flooding, blocked drains
- The area around Dyfi bridge are continually flooding preventing people from going to work, and preventing the emergency services from getting people to hospital
- Rising costs of fuel,gas electricity etc as is a very rural area. This will impact on travel, ways of working and levels of poverty
- Food security,community resilience, energy costs and fuel poverty
- the change in intensity of weather extremes and the widening of the gap between the rich and poor of the world, Also the treatment of the old and vunerable

- The community will soon no longer be able to rely on outside bodies and external finance to maintain all its services. We must all learn to be less dependent and to use our own social and financial capital.
- Large scale housing developments planned for West Carmarthen which may cause flooding problems at existing properties.
- Lack of employment / Road infrastructure problems / Flooding /
- supporting services that the County Council may be dropping
- Llandovery Town Council seeks to improve business opportunities in the town and increase its population by providing affordable housing, together with attracting visitors to the area.
- Growth from Cardiff LDP and lack of infrastructure
- Youth unemployment; lack of inward investment; over development.
- fi mnance is effect means we all have lessmost important with finance being cut by the uk government a domino
- Traffic congestion and the lack of local facilities for shopping/leisure and sport
- My Town is on the flood plain of the River Dee. There is a perception that the Environment Agency have reduced considerably the maintenance of the streams and ditches in our area. The streams all lay below the lever of the river and the water is pumped up and over the banks into the river/
- Increase in traffic flow through small hamlets. Older constituents are getting increasingly worried about cost of heating homes. Lack of public transport into Abergavenny and to rail station.
- FINANCIAL CUTBACKS RESTRAINING PROGRESS TO THE DEVELOPMENT OF THE TOWN
- Over development. Employment. Infrastructure capacity.
- Planning issues, transport issues, environmental issues, waste related issues.
- Air pollution caused by the Forthcoming Local Development Plan which will cause 7,500 houses to be built in St Fagans and Radyr,the road infrstructure cannot take it.. This is the size of Cowbridge, 21,000 extra people coming!! / Suggest you comment on the LDP before 14 12 12 / There will be an extra total of 45,000 extra houses in Cardiff !!
- Preventing flooding - more co-ordination and responsibility from Council, local community and farmers. / . Protecting public transport within the community. / . Reducing road / land erosion by minimising surface flood water ensuring adequate flood and water / management. / . Supporting the possible development of hydro power within the community. / . Sustaining the environment in which we live for future generations to benefit.
- Climate change is a key issue and the challenges that this brings is far reaching.
- Use of the car and issues caused e.g. air pollution, parking and in established older communities there is very little scope to alter ancient road layouts. This causes conflict between cars, pedestrians, cyclists.

- The vast increase in the numbers of vehicles using the B road which runs through Radyr, It is the only really viable link from the village to the north and south. It has become a cut through for traffic in both directions leading to grid lock at peak times on most days. Not only do the fumes irritate and pollute the atmosphere but the lives of residents are affected, particularly cyclists and children walking to school. For this reason many parents drive their children to school, adding to the congestion. The completion of 1200 new homes in the village, without any settlement centres, all reliant on the village centre also presents challenges. An added cause of congestion is that Radyr station is, with Coryton and Heath High level, on the edge of the cheap fare zone leading to incomers parking, often randomly, in local streets. Arriva Trains say Welsh Government imposes the restriction. WG says they have nothing to do with it!
- Price of fuel. / Uneven / unexpected / exceptional / unseasonal weather patterns. / Property stagnation. / Food production and cost.
- The callous use of nuclear power; if we carry on using it with no yardstick to determine any safe disposal of the waste, let alone the potential time bomb waiting to be detonated (inevitable accidents that are occuring due to climate change and human errorr) we do not need to worry about climate change at all, as we will wipe ourselves out with this invisible clean energy radiating us.
- Possible new housing developments. Building work at Llandough Hospital. Traffic and parking issues. Provision for and involvement of the youth of the village.
- Cost of energy / Highways issues due to severe weather damage
- High price of oil/petrol. As a rural community we are very oil dependent for heating and transport. / There is a lack of affordable housing. /
- Increasing age of the population withretirees moving in and youngsters leaving because there is little wotk.
- Community duty to contribute to carbon reduction targets / Localised flooding affecting <5 properties
- The number of cars on country lanes /
- Improving energy in rural homes. / Increased flooding / Less sunny and warm weather
- Protection against Flooding
- Balancing landscape and housing needs
- Climate Change
- Lack of funding
- Developing and keeping a 'community spirit' A lot of new housing has fragmented the community recently.
- Rising cost of fuel for household use and transport - both essential / Occasional flooding on roads due to growing frequency of heavy and prolonged rain
- Council cut back imposing unfair redunences among the manual work force
- funding & spending funds in the most appropriate manner
- Traffic congestion and parking .
- The economic state of the country leading to reduced public service and less investment in infrastructure. Climate change. International tensions/wars. Loss of freedoms if we descend into a state of emergency in response to external crises.
- lack of facilities for the youth and older people. at the moment they have no where to go in the nights and of course the youngsters are left to wander the streets
- Flooding / Infrastructure in terms of roads / Ensuring sensible housing

- Encroachment of 'green space' for development agreed by the Local Planning Authority, with what seems like no regards for for the existing local community. / / The possible building of a high quality road across the Gwent Levels to alleviate congestion on the M4, with no regards for the wildlife, existing bio-diversity, and historic landscape that the route would take. / / Impact that any proposed barrage across the Severn Estuary/Bristol Channel would have on the estuary wildlife and birdlife and on the Gwent Levels, the impact of flood or lack of flood water levels
- New housing and lack of leisure facilities
- Wind farms causing noise pollution and adversely affecting the animal/bird life and the overall beauty of the area. It has just recovered from the scars of the mining industry.
- employment and the retention of employment and or people in the area more especially the ones with ambition who seem to be encouraged to leave due to the restrictive attitude and oppresive regularity we have which has the best protective interests but has unintentional consequences
- Maintaining our environment and traffic issues.
- Maintaining or increasing empoyment and retaining the young people in the area. / Resisting major developments if they change the character of the area. / Maintaining a good and consistent level of socia services.
- Loss of identity owing to the expansion of Chepstow which is likely to engulf the community
- Home energy costs, fuel (petrol and diesel) costs. Affordable housing for young people.
- Housing development on the perophery.
- The need for an attitude of community togetherness. The need to look after our local environment while accommodating some expansion/development
- Ageing population / Excessive in-filling / Loss of surrounding green belt / Loss of last remaining farms
- The likely devastation of Lisvane and the area East of Lisvane resulting from proposals in the Cardiff Council Preferred Strategy to build 6000 houses etc. on existing open land. / The resulting population and traffic increases will increase air pollution significantly, destroy trees and wildlife, increase demand for water and add to already overloaded sewage systems.
- We need to keep as much open countryside as possible in the face of Cardiff's LDP. Where there is development, to make sure it is "green" and that public transport is hugely improved, into, across and around the city.
- SEvere weather conditions adn flood risk
- Erosion of the coastline
- Energising our local electorate into active participation in the new Powys Local Plan. In particular, finding ways to identify a sustainable framework for the future of our community in the face of the economic conditions and the many external pressures.
- General issues: / Access to and provision of health and social care / Lack of transport services / Lack of employment opportunities / Lack of affordable housing / Lack of educational choice / / Environmental issues: / Flooding / Air pollution / Waste management (including drainage) / Loss of habitat and species diversity
- Traffic congestion / Tree planting / Cycle paths
- Continuing housing development on green field sites

- Increasing size of vehicles on narrow country lanes causing damage to verges, and blocking verge-side drainage resulting in localised minor (non-damaging) flooding after heavy / sustained rain.
- Social and very affordable housing / Upgrade and expand sewerage works as at present to small / Traffic and parking / Anti social behaviour / / / / present to small /
- NEW WELFARE REFORM BILL, LACK OF SUITABLE HOUSING STOCK, INCREASING ENERGY COSTS LINKED TO RISE IN FUEL POVERTY, UNEMPLOYMENT AND LACK OF SUITABLE EMPLYMENT OPPORTUNITIES.
- loss of rural character and agriculture
- Lack of sufficient funding / /
- Climate change and the ability of the Community to function as a predominately farming area. /
- Increased flooding / Unemployment among the young
- Maintaining open spaces, sports & play areas and public footpaths in view of the deteriorating climate together with a reduction of local authority budgets.
- employment
- Preventing flooding, through adequate drainage and maintenance of these structures through cooperation between council and local people. Ensuring that transport links are maintained and prevent further reduction in public transport from our area.
- Over development of the Village, we do not want to become a town.
- emloyment
- Ageing community.
- AIr pollution. We live on quite a busy road to an industrial estate where there are a number of processes in operation.
- immigration.
- Finding jobs for all groups
- Ferryside is a coastal village with some of the dwellings on a flood plain. Sea defences are important issue especially for those living close to the railway line. The sport field cannot maintain activity because of frequent flooding. Houses are having to take precautionary measures to combat water run off from behind the village and sea water from the beach side on high tides. We want to see affordable housing but the flood plain restrictions are preventing this.
- Adequate funding to rural areas from local and central government resources.
- Lack of quality affordable housing that is in keeping with the area(A.O.N.B) / Neglect of land, hedgerows and woodland and drainage/watercourses by landowners and local authority, which over the years has led to the area comparing unfavourably with neighbouring villages. / No designated children's play area.
- Highways problems / Culvert clearance and drainage
- Extreme weather events causing flooding and erosion.
- Irregular wether patterns effecting farming e.g. what crops to cater for 2-5 years in advance
- High unemployment, inadequate transport links, isolation fuel poverty caused by green taxes and unaffordable useless wind turbines being subsidised, and expensive fuel
- Coping with the financial constraints and their consequences
- employment. aging population, lack of ammeneties in village

- Acceptance of sustainable alternatives for energy generation by the public and the dissemination of more information on this matter.Dissemination of more information on recycling and influencing the public to get more involved and aware of the issue.

- The accelerating erosion of the Welsh Language due to lack of commitment by native speakers to ensure that they teach the language to their children and huge inward migration by non Welsh speakers. Climate change may not affect the community directly, but will have enormous indirect effects due to global effects i.e. rising food prices, water management etc
- Poverty / Education / Social issues
- Being duped into believing the greenwash that WAG puts out all the time
- Threat of over-development raised through proposed Cardiff LDP

- How to maintain a sustainable and viable community with sufficient employment, able to withstand the pressures of population growth, food security and the problems of an ageing population without sacrificing the special protected landscape in which we are lucky enough to live (Brecon Beacons National Park). In using the word sustainable I include coping with trying to limit and deal with the results of climate change.

- how can we talk about increasing homes and therefore encouraging the population to increase which will then require extra roads , more railways, bigger airports. Most of this on greenfield sites and then support eco systems. If you support the one then you can't possibly support the other. More people mean more pollution, more energy requirement more traffic congestion and the destruction of our countryside and Planet' Our society needs to realise that we must take responsibility for future generations to survive, by accepting the truth that to have more children than needed is a completely selfish attitude. To keep increasing the population with the knowledge that we have that this is unsustainable (is madness.) Small families should be encouraged and larger families frowned upon with no assistance given for any children more than two.
- Working towards environmental sustainability. / Satisfying the needs of all sections of the community, especially those of the elderly,disabled and disadvantage
- Climate change and best use of Resources.
- Sustainability of a rural hub and future viability of the seasonal community given central County Council cuts in essential touritst services (viz public conveniences). Economic difficulties resulting in lower tourist numbers with the knock-on effect on local businesses. Possible further reduction in bus services. Ageing community. Loss of younger members if local jobs are lost. / / Challenges related to greater effective use of natural resources (e.g. beach) and heritage of local area in order to stimulate the local economy.
- Litter and dog fouling collection. / Over development of housing by MCC within the LDP
- threat to local hospital, Registrar's office, police station and constabulary numbers, cut of fire service, isolation due to flooding of access roads, poor GP access/service, sorting out the Chamber of Trade and commerce and unruly elements on the community council, economic deprivation and unemployment, poor returns from farming and tourism.

- To retain a sense of "community" in the face of bad planning decisions being made by the County Council. To explain, the perceived compulsion to build large houses in villages to the detriment of the local environment. This introduces the wrong demographic mix & results, long term, in dormitory villages with little support for local businesses, pubs, schools & other activities. We need smaller, cheaper (I refuse to use the meaningless term "affordable") houses in villages now! / I live in North Wales.

- Sustainable energy and food production.
- Traffic /
- The general errosion of a unique countryside community to ever increasing 'industrialisation' of our environment. The siting of wind turbines in rural areas is ridiculous when there are brown field sites available. Light polution is another example of uncaring planning.
- removal of primary school and older generation needing more care.
- Being a coastal resort - rising sea levels and flooding
- Jobs and suitable housing for local people
- Finance
- Sea level rise / / Weather instability / / Extreme weather
- Local development plan
- innappropriate overdevelopment
- 1 Cost of fuel in a rural community / 2 School closures due to lack of children
- Maintaining community cohesion and social interaction within a community that is disparate and rural. Keeping up maintenance on roads, village halls, social buildings and community spaces so that they don't degrade beyond modest, low cost levels of repair. Continuing support for individuals and groups that struggle financially, physically or mentally.
- We are in the Brecon Beacons national park and we are anxious to differentiate a national park from other areas with respect to housing and industry. In English parks such as the lakes, no open market grousing is permitted, likewise industry is severely governed. This is not the case in our park.
- The danger of overdevelopment with increasing incursions into the green belt, a deterioration in the quality of the road network (particularly in rural areas) and the erosion of public services.
- Snow
- A need to sustain and increase the services that can be provided for our ever growing community at the same time not to have an adverse affect on our environment
- More extreme weather.There seems to be a trend recently that we are getting record breaking types of weather which can have far reaching consequences on all aspects of life,be they environmental or financial.The weather effects every aspect of life and should be taken more seriously as we owe it to future generations to do as much as we can to help counteract the effects of such extremes in the weather.
- Loss of our peaceful rural environment through excessive and unsuitable development.
- Reduction in Borough Services due to budget cuts / / Affordable Housing and the economic situation
- Sustainability and management of cockle beds. / Traffic management and parking. / Withdrawal of County management of public loos and other non statutory services. /
- Traffic, polution, lack of control over environment.

- In the Amman Valley, the direct consequences of climate change, at least for the next few years, are probably quite small. The main problems are: rebuilding communities still feeling the effects of the ending of coal mining; improving employment opportunities in the valley, especially in jobs demanding more qualifications so children from the valley who are well qualified can find jobs locally; environmental improvements (eg. recycling, reducing littering and fly-tipping) to make the valley a pleasanter place to live and more attractive; dealing with the rapid cultural changes associated with decline of the Welsh language and related institutions like chapels.
- Pressure on public services.
- loss of countryside due to development. / Traffic dangers, more cars in a village with no pavements
- Improvement in services. (information provision incl.) / Promotion in community. / Provision of community facilities
- Employment & the lack of it, health care, education, the environment, local services. All of these are heavily affected by weather (e.g. recent cold weather makes access to healthcare facilities very difficult especially for pensioners and the disabled).
- Dog Fouling, Sewerage, and Housing.
- infrastructure problems - poor maintenance of highways; slow internet access; traffic problems around the school; deteriorating / local services; pressure of growth from Cardiff and pressure on remaining services.
- Devolution of services to Community and Town councils as increasing pressure on Unitary Authority
- Flooding
- Traffic problems ie speeding / ASB / Adverse weather conditions
- Lack of empoyment, loss of young people, influx of non active retired people
- Everyone in the community needs to examine their use of resources, to minimise their impact on scarce global resources and to use what they do need as efficiently and effectively as possible. Any unavoidable waste needs to be efficiently recycled locally if possible avoiding transport across the world, (some elecronic items are sent as far as China). I think too the the community should make some efforts to assist less developed nations to access resources to improve their lives and help them in using scarce resources more efficiently - we all live in just one world.
- maintaining fron tline services with tghe onset of reduced budgets and funding
- To work together, ensuring best value. The fear that other authorities will be unable to help due to lack of funding
- Maintenance of highways and rights of way due to the economic downturn. People need to be aware of this and endeavor to assist whenever possible.
- Provision of Rural Transport / Healthcare for the elderly and vulnerable
- There are no shops in the area,the post office has closed and the primary school will close.Transport links are poor and the reliance on cars is extreme
- Y mewnlifiad yn parhau - mae iaith y gymuned wedi newid bron yn gyfan gwbl i'r Saesneg erbyn hyn ac mae'r diwylliant ac arferion lleol yn marw. Bydd yn her fawr i gadw'r Gymraeg yn iaith fyw ac yn iaith byw yma.
- - Eithafion tywydd yn peri problemau annisgwyl ac anghyson. / - Anhawster cael yswiriant o ganlyniad i rai pobl. / - Diffyg gwaith i gadw'n pobl ifanc yn yr ardal / - Strwythurau cyhoeddus (ffyrdd etc.) yn dirywio oherwydd toriadau / - Ad-drefnu

ysgolion

- Diffyg swyddi i gadw bobl ifanc yn y gymuned. / Canoli gwasanaethau yn y brif trefi / Trafnidaeth - pris tannwydd a thrafnidiaeth gyhoeddus ni ellir dibynnu arno /
- Cynnal y Gymuned trwy ofalu bod gwaith yn parhau!
- Llifogydd - oherwydd nad yw'r afonydd/ffosydd ac ati yn cael eu glanhau fel y digwyddodd dros ddegawdau, hyd yn oed ganrifoedd, gwelir llynnoedd newydd ar dir amaethyddol i fyny Afon Soch - gwyddys am rai ffermydd yn methu Ã¢ chadw stoc ar y tir oherwydd bod pymtheg (15) acer dan ddwr. Ni roddir digon o gefnogaeth i amaethwyr. Mae cais cynllunio ger bron i godi tai ar lan yr afon - sy'n orlifdir - a byddai hyn yn effeithio mwy ar y tiroedd i fyny'r afon. / / Tai - pryder am y prisiau anhygoel sydd yn yr ardal, sydd tu hwnt i gyrraedd trigolion lleol. Prynir y tai fel ail gartrefi ac ychwanegir at eu gwerth trwy un ai eu dymchwel a chodi rhai newydd yn eu lle neu ychwanegir estyniadau enfawr atynt. /
- Llifogydd heb reolaeth
- Arianol
- Cyllid. Yn arbennig o ystyried bod y Cynghorau Sir am i ni gario mwy o faich dros wasanaethau i'r cyhoedd e.e tai bach, parciau etc. / Mae'n bwysig cadw ein parciau oherwydd y perygl o'u colli fel adnodd pwysig nid yn unig i'r cyhoedd ond i gael mannau gwyrdd. Dylwn hefyd ystyried os ydym am gymryd drosodd gofal ein parciau ein bod yn ymneulltio mannau ynddynt i fod yn fwriadol wyllt, er mwyn annog natur naturiol, boed yn blanhigion, anifeiliaid bychain, adar, ag ati. Ond o wneud hyn rhaid gochel rhag annog chwyn estron ymledol e.e canclwm a jac-y-neidiwr.
- Cynnal gwasanaethau mewn hinsawdd o doriadau ariannol
- Y wasgfa ariannol - pa bethau ddylai gael blaenoriaeth a pha bethau sydd ddim mor hanfodol. Mae gan pawb eu blaenoriaethau personol.
- Gwasanaethau yn cael eu dileu neu wthio i'r Cyngor Cymuned gan y Cyngor Sir, neu colli SLAs; ee taibach, cau llyfrgelloedd / Llai o arian i gynnal gweithwle bach. / Edrych at y dyfodol a chynnig gwell cyfleusterau i'r cymuned. / Cadw'r neuadd cyhoeddus a cheisio iw datblygu.
- Y tywydd ar ei effaith ar yr economy

C.2 In what ways will [your community will be affected by climate change in the coming years]?

- Extreme weather events appear to be more frequent
- one or two propertirs may have increased risk of flooding due to proximity to river.
- Man will adapt to gradual climate change
- More severe weather conditions
- Lack of facilities to distribute food and services, perhaps, due to heavy snow and high tides. Lack of funding set aside to meet any future problems.
- Directly by extreme weather conditions - floods/heat waves etc, and indirectly through crop failures in other countries on which we rely for food. We may also need to accommodate environmental refugees who have had to flee their home countries either because of sea level rises or because of consistent crop failures.
- Flooding risk increasing, fuel cost rising, changing vegetation effecting livestock, hot dry summers possible drought.
- Rising sea levels and coastal flooding
- wetter summers

- Greater extremes of weather may lead to significant areas being under water if the climate heads towards more rain, or sea level rises. If the climate goes drier, grass may no longer be the best field crop so there maybe a change to agruicultal practices. some indiginous plants and crops may die out, partiuclarly if it gets much hotter or colder. I guess ultimately people may move elsewhere on a global scale.
- We have several rivers in the community
- Flooding - already. Air pollution - already. Fuel and energy price rises - already. See my first question for details
- The Community is in a low lying area dependant on sea defences and efficient drainage. Rising sea levels could require additional measures particularly in the longer term.
- Susceptibility to violent changes in the weather.
- possibly flooding/drought
- floods
- Flood risk increasing, health issues arising from changing temperature and climate, food is going to become more expensive..
- Weather will become more erratic with more frequent extreme events
- Increased flooding. More extreme weather.
- Change in weather patterns and availability of food from other countries
- Change in weather patterns
- More severe weather conditions e.g. harder winters, storms, flood risk.
- It depends on the extent of climate change, and that we have to surmise. but it could affect / health-carbon monoxide) but that could be reduced by other forms of transport ? / The way we live, maybe more local/less travel, so a redistribution of resources to meet that demand-employment/improved facilities-education/social/sport. There would probably be a reduction in material living standards, so re-education would be vital. 1984 is probably just around the corner !!!!
- As I have already stated we are on a flood plain. The area is reclaimed salt marsh.
- Flooding and sea level changes irrelavant given our topography and location. Perhaps some improvments in weather conditions but then again perhaps some more severe weather events. Some impact from global implications in the longer term.
- Water supply and flooding
- Flooding on playing field affecting one house, possibly affecting other houses. More rain less sun will make everyone feel unhappy. We seem to have more cloud cover now. Also light pollution affects our feeling of living in a rural community.
- Increase flooding
- More rain, more heat, less crops, higher costs.
- flooding air pollution and traffic congestion
- The weather patterns will change and an already damp country will become more so. This summer's gloomy atmosphere has caused mild depressions in some people; exacerbation of chest and lund complaints; cancellations of community festivities and thus a loss of a sense of community; plants and animals changing their behaviour and a general lack of well being.

- It could impact on food - if climate change started to happen quickly the food chain would be immediately affected - people need food and panic at seeing food sources dwindle could be catastrophic.
- It depends on the management of climate change, on how it will affect.
- More rainfall, hotter summers, effects on health and nature
- Flooding and landslips from severe weather
- The farming economy is utterly weather dependent. Tourism here is definitely affected by the weather. Together these two industries provide most families with their income.
- Extreme weather, rain and wind, and rising sea levels flooding some coastal roads and loss of a few houses
- The increase in heavy rain this year has left eroded roads, flooded land. The face of rural communities in agriculture land is already evident, eg some maize is still in the fields, and it will be impossible to harvest. Farmers, and already aging population, will be fed up and give up.
- More extreme rainfall and periods of drought will affect this farming community
- Mostly surface water flooding
- Possible flooding on lower areas due to high River Severn tides combined with severe weather.
- Flooding and extreme weather
- Possibly localised flooding. Prolonged periods of drought will impact on livestock
- wetter winters, extremes of weather out of season, crop failures in agriculture
- may be flooding, crop growing and outdoor activities
- mostly due to flooding as this area is on a high risk flood plain
- difficult to tell - it depends on the gulf stream/air streams
- more extreme weather events / some localised floodig / loss of some species of plants birds insects and animals / new types of animal bird insects plant diseases/parasites / arrival of different types of fauna and flora / changes in agriculture / changes to landscape / effcts on tourism / rising food prices / rising cost of energy / implementation of greener policies changesin lifestyle /
- Increased likelihood of weather extremes leading to damage to roads,properties, power and water supplies from excess rainfall, storms etc. / Cardiff and other coastal settlements may also suffer from rising sea levels - this will have a knock on economic effect even in our rural community which is up on a hill and not likely itself to flood
- mainly flooding we are a community who are living below sea level
- flooding
- If sea levels rise, then the community would be affected by potential flooding as it lies on a floodplain - the current sea defences are inadequate to cope with increased sea/tide levels from the Severn Estuary
- Flooding

- Lifestyle changes required and to be able to amalgamate resources to assist also greater awarness and selection of choice to at least do a little to help and get going in the right direction - also to turn the tap off from the insaitable consumer society which regards choice as a right or essential toward a more enlightened way of life that reduces the ability of international air miles to place out of season produce into a national distribtion system to get a prize. Also the idea of overseas holidays which rely on travel which has never paid the ecological price. Life style change is the simplist way i can suggest will be esential if we are t make a valid contribution to reduce carbon production which will also have to look at the quality of our buildings to reduce our demands on fossil fuels.
- Rise in sea level. Flooding caused by more rain.
- Some may be flooded. Wind damage to property, trees etc. which can also impact on mobility on narrow roads. Blocked drains/culverts - cost, disruption. Changes in agriculture - seasons, temperatures, crop growth/not growing. Increased soil erosion.
- Flooding
- More extreme weather rain, snow etc.
- More rain and warmed weather.
- Variable, erratic and totally unpredictable weather cycles
- Water shortages. Extremes of climate. Increased pollution. Rising prices of staple commodities. Potential unrest in countries more widely affected,
- Storms and unusual weather patterns. Diseases of flora and fauna spreading from warmer regions. Loss of habitat of some species.
- erosion and flooding
- Increase in severe weather events and flooding.
- Flooding will be a particular problem because climate change may cause increased rainfall in short periods (though not necessarily overall) within our area that will exacerbate an already acute flooding problem. / / Flooding not only causes problems for people in the homes and businesses on flood plains but will also affect economic output by destroying crops, affecting farm animals and possibly reducing tourism opportunities by reinforcing a perception of a "wet" Wales.
- Rising costs due to crop failures, storm and flood damage, energy costs, medical costs, pollution. Whilst the community may not be directly affected by the impact of climate change the costs will have to be borne by all.
- MOSTLY DUE TO WEATHER AND CLIMATE CHANGE PLUS THE IMPACT ON THE INTERRNATIONAL SCALE
- The UK temperate Climate is constantly changing due to location. Obviously this will affect my community. This questionnaire implies that change is bad, and it will become hotter. I remember predictions of the next Ice Age (due around now), when the weather appeared to be growing cooler in the 1970s. This subject requires much more research.
- Excessive rain, wind, and may be drought.

- If as a result of climate change there is more rain (which seems the case) then there will be more flooding. Homes will be uninhabitable, houses will become uninsurable, people will want to leave. Tourism (the main income) will fade, employment will fall, incomes will plummet. Their will be little opportunities for young people. Farming,will become increasingly challenging because grazing land will become sodden, boggy and unusable. Housed stock will require expensive feed. Vetenery bills will increase. Older members of the community will find transport/mobility more difficult and morale will be lowered.
- Higher tides leading to flooding of main road and parts of Gileston. Change to extreams in Summer and Winter weather . / Changes to wild life and Birds in the area.
- Higher rainfall.
- There has always been a flood plain in this area. It is possible it may extend over a greater area and affect more properties
- Climate has changed one way or another over many years. While the Polar ice cap is receeding it is stated that Antarctica is growing. Changes in climate will affect the whole of the ecological system from insects, plants etc. etc. affecting the food chain both on land and sea. are natural causes greater than man made causes? both influence the future.
- Localised flooding
- Increased risk of severe weather conditions. Poulation migration species extinction
- It is a rural farming community and therefore the crops will have to change to suit the changing climate
- increased potential of flooding
- higher rainfall causing some crop failures / water damage to land and roadways
- Flooding
- land erosion and farming
- Constantly be either wet/dry/hot/cold
- People from more affected areas may well want to move here
- Flooding tendency of Usk river basin
- Extreme weather events mainly flooding and wind
- food prices/shortages, fuel costs, lower income relative to outgoings,lack of 'proper' sound information, (as opposed to the one-sided arguments different 'experts' and parties give out at the moment.
- Flooding
- There will be further distress experienced by the poorest, the elderly and the young in the community due to the effects of more frequent disasters.
- Extreme weather events will become far more frequent. Climate change will reduce worldwide production of food and other commodities. Increased deprivation in badly affected areas of the world will lead to conflict and competition for resources. There will be loss of species and habitat.
- unprodictable seasonal climate.
- Water table

- More extreme weather conditions may affect the community. As a rural community drought or excessive rainfall may have severe effect on local farming businesses. Global shortages of food and fuel and consequent price rises will affect the whole community.
- Farming would be affected and already is this year due to the high volume of rainfall
- the same way as other communiies
- Excesses of climate and its. Effects
- isolation from emergency services by flooding, possibly coastal erosion, changes in tourism and farming
- Probably more flooding, possibly of a moderate nature. Long term....who knows?
- Weather extremes which could lead to food shortages, travel disruption etc. My own community is situated at the top of a hill some 65 metres above sea level and some 3 miles inland. If we flood there is no hope!
- More extreme weather - of some type or other.
- Climate change affects the whole world not just communities. It affects the air we breathe, contaminates the rain and causes pollution at all levels.
- flooding and wind damage
- Un predictable weather patterns
- increased rainfall. Changes in the way the gulf stream operates
- Increased dea levels will affect sea defenses. Increase of storms will damage sea / rail defenses.
- Weather instability - difficult farming conditions. / Ditto - bad for home-grwon fruit and veg / Ditto - bad for tourism. / Extreme weather - problems with heating buildings and keeping them in good order.
- when and what crops to grow, is hay a thing of the past, when to lamb, what vehicle to own, can we be more self sufficient, better use of public transport...
- by extremes of weather - prolonged heavy rain (as experienced this summer), snow (as experienced 3 of the last 4 winters)
- Drainage, Road Repairs, General Maintenance of the highways network and water supply services will need to be a higher priority
- We recently experienced unusual flooding (River Cadoxton) but due to the topography little damage was done to property. Extremes of weather will also increase the cost of maintaining homes - affecting the fabric of buildings. (Residents will also need to take additional measures against the cold and dampness in winter and increased temeratures in summer.)
- More rain fall leading to very wet farm land
- being a rural farming area, farmers are going to be affected and this is evident even now with the increase in rain fall, crops either fail or are badly damaged, livestock suffer in the adverse weather conditions and soil is eroded, all of this will impact on the day to day lives of the community
- See comment at the start of this survey
- aeh
- Possible problems with flooding in part of our community
- Water, rain, storms, strong-winds. Farming mainly rattle and sheep. /

- Difficult to say because local effects of climate change are difficult to model, but probably wetter, cooler summers and wet winters.
- More extreme weather events
- flooding, 1 house & road into village
- Flooding / Storms
- more extreme weather mostly wet & gales
- Difficulties arising from extreme weather events
- Increased flooding.
- flood risk
- Farming practices may be affected. This is a sheep and cattle-rearing area: drought would reduce the grass crops forcing farmers to buy in feed or turn to some other form of farming
- flash flooding and erosion
- In the area we live, 1150 feet up, I would anticipate more extremes of weather; stronger winds, more cloud in summer and more sno/ice in winter.
- Farmers will be unable to carry out their work either to drought or because the land is saturated with water
- More rainfall
- Flooding and extreme weather
- Os yw'r hinsawdd yn wlypach, bydd mwy o risg o lifogydd. Os yw lefel y mor yn codi, bydd hyn yn effeithio ar y ffermydd ar bwys yr aber.
- Effaith llifogydd / stormydd / eira a rhew / a'r problemau gaiff ei achosi gan hynny
- Clefydau newydd yn effeithio ar y diwydiant amaethyddol a choedwigaeth, tywydd yn mwy eithafol - llifogydd - prinder adnoddau
- Mwy o dywydd eithafol
- Mwy o lifogydd
- Llifogydd yn debygol
- Llifogydd. Tywydd eithafol
- Glaw trwm
- Mwy o law. / Hafau gwael.
- ymhob ffordd; cymdeithasol, ariannol

C.3 What action, if any, has your community taken to prepare for these [climate change] impacts?

- None
- Recycle more, adopt renewable power generating technologies, adopt sustainable methods of grounds maintenance
- None
- Sandbagging at high tides has always been practised
- none
- None
- The Community Council have prepared an Emergency Action Plan

- My community has taken little action so far to prepare for these impacts. We have consistently opposed inappropriate development, without success, but that is about all. The community is continuing to press for more parking instead of better public transport, and provision for cyclists is frowned upon by many. Flood defences have been installed but this is offset by the County Council's decision to allow more houses to be built on flood plains.
- none
- Flood awareness programmes
- none
- There has been a significant uptake in solar water and solar electric, but I feel that been achieved by those who could afford it rather than genuine attempt to address climate change. / Most deal better with recycling, but almost no one address no creating the waste to start with. / Unbelievable apathy to reduction of energy useage. - Some one elses problem!
- Nothing as yet
- Joined the Cittaslow movement and working on a raft of community interventions to improve peoples' awareness of actions they can take to help make for greater social cohesion and community resilience. www.cittaslowmold.co.uk
- None apart from urging national investment to avoid detrimental effects.
- That's like asking a leaf what it intends to do about the hurricane. / The Community is exposed to the elements but not very much to the consequential effects like flooding so not real opportunity to take preventative action.
- We have 'part nighted' the majority of our publiclighting assets
- none
- none
- Dovey Bridge panel has been set up try and get the Welsh government to help
- Not sure, some evidence of tactical actions by groups..e.g local food cools and csa schemes
- there is a flood prevention sceme in place
- Some recycling but little else
- Energy saving review carried out at the main property (Offices & Civic Hall) four years ago. / Solar panels installed at the above location two years ago to reduce reliance on power supplies this Council owned property. This first project is producing sufficient power to make the premise self sufficient in electricity. / Further similar project planned, and is to be implemented next few months on the grandstands (tenders received). / Electricty, water, gas and power supplies to all properties being monitored (recorded) on a regular basis. / Secondary glazing introduced (small project) to reduce drafts and reduce office heating costs. / Council established an Environmental Group three years ago, which meets regulalry and report back to Council.
- Nothing significant at present. Recycling is going well and local sourcing of food is being publicised but as a community I don`t think we are taking any coherent action.
- We have a flood awareness group
- none
- None
- none

- We are trying to get a grant to improve our community facilities by building a Community Centre as a centrepiece to attract our community to the various facilities it will provide, but also to get them to network with each other like real communities, to generate help and ideas on our future, but you need a centre facility/attraction as a central hub.
- Continue to press the Environment Agency to dredge the river to no avail.
- None
- I am unaware of any actions, but I have only been a Community Councillor for 2 years.
- No direct immediate threats, therefore no actions.
- None
- Much more recycling; production of village Development Plan to represent villager's views on Housing, Transport, Environment and Social issues.
- NONE AS FAR AS I KNOW
- Not aware of any
- The Community Council is preparing a resilience plan to meet extreme weather conditions. We are fighting plans to expand housing round us both on the grounds of numbers and because the local roads, health centres, schools and water resources and inadequate
- None that I'm aware of.
- None, bar a few individuals putting PV in place and using low energy light bulbs etc,
- We are on high ground so flooding is not a problem. Some people have improved loft and cavity wall insulation to conserve heat.
- None
- Our Community Council is developing a flood action plan together with the environment agency. Little we can do about the price of oil. Planning permission for renewables has got a lot easier - though not for listed buildings.
- None
- none
- None that I know of
- Has asked the Environment Agency to assist in developing a Flood Plan / Has promoted insulation efficiency surveys
- flood defences
- None so far
- Flood agency has set up plans to get people out of their homes. Sea defences are being re-constructed and local river is to be diverted away from one of our vilages.
- Requested the river Severn defences be raised from Chepstow to Newport
- Wind turbines, Solar panels
- None
- None specifically, tho we do act on solving minor flooding problems
- working closely with groups such as the environment agency and other organisations such as the RSPB, also working with the unitary authority to produce a flood action plan /
- recycling area / flood alleviation / wind turbines HEP solar panels
- We have a flood defence scheme in place due to previous flooding in the community . / / I am not aware that this was a respose to climate change.

- None that i know of.
- none
- Some work on trying to drain off water from fields
- A local group "Gwent Levels Flood Defence Coastal Group" has been formed to campaign for the Government and Environment Agency to take a more positive role in ensuring that the sea defences are adequate, and able to cope with increased tide levels. / /
- talking of community generation with a wind turbine - one sectio whilst the other part of the community has stuck its head in a hole so it will not see any problem
- Flood plan for the one "at risk " area
- The Community Council supports efforts to improve sea defences along the Severn estuary
- Community Council is trying to work with Environment Agency on a flood plan for one village.
- Lobbying Government for improved flood defences on Gwent Levels
- publicise local authority community resilience measures.
- We have been forced to accept reduced street lighting and the use of LED lights which are not as bright. And I'm delighted!
- Very early consideration of Emergency Organisation and volunteer staffing
- Minimal action
- The Community Council is actively promoting sustainability, initially in its own buildings but also in the wider community. A lot of work is being done to protect the local natural environment.
- Individual businesses who are directly affected by erosion
- I can't think of any specific action, but there is an increased sensitivity to the effects of flooding in the context of planning proposals and changes in land-use (e.g. replacement of peat by concrete in the context of wind-farm proposals)
- Drainage systems (such as culverts) have been deepened and widened to accommodate greater water flow during wet periods. / Minimal flood defences have been put in place close to the river within our community. / Some bridges have been strengthened. / Tourist organisations are looking at ways to capitalise on wetter weather and ways to make money without relying as much on visitor numbers.
- None
- Observations to statutory Authority
- Not building on or near flood plains / Retaining attenuation locally on all planning,roads,drives etc. / Recycling / Reduction of packaging
- ONLY JUST STARTING TO BE MORE AWARE INTRODUCING MEASURES IN HOUSEHOLDS TO REDUCE THE DEMAND ON ENERGY AND RELIANCE ON FOSSIL FUELS.
- Individuals will adapt with the weather and see what happens, but nothing community wide as far as I know.
- Recycling
- none
- No more than already exists
- none
- None

- Taken part in Buw Sir Gar consciousness raising activities
- Many of the farmers are diversifyign their crops
- none
- Nothing as yet
- currently we are experiencing a particularly wet period, and for the past 4 summers there has been less sun than normal - fact based on the way plants are growing and ripening. There has been a move towards cutting back trees etc to allow more light, more buildings to protect plant growth and products from rain.(car ports, log stores , outside covered drying areas, poytunnels and greenhouses. Also work has been carried out to prevent water ingress to property.
- None
- None
- none
- none
- None
- Keeping storm drain clear
- ??????????????????
- I am not aware of the work of the environment agency apart from its promotion of sustainable energy.
- Very little. The community is sleepwalking into a disaster on a global scale. Evidence of this is shown by hostility to installation of renewable energy sources (wind farms) locally, and reluctance to confront the issue.
- Solar panels to reduce need for excessive electricity
- A local group has been formed to address reducing the carbon footprint of the community by promoting energy saving and renewable energy production.
- Not known
- I don't know
- Very little
- Dont know
- None
- we have campainged for improved sea defences, but what we got did not go far enough
- None
- None
- None
- Action taken has been to ensure issues are dealt with when they ocur. These can be dealing with small levels of flooding, rubbish etc. But also, supporting groups, such as volunteers clearing & maintaining local woods etc. / We are also raising awareness of local issues affecting the community and holding meetings with the public on the proposed Cardiff development plan, which envisages building 8,000 houses on greenfield sites near the community without the necessary supporting infrastructure.
- Were hoping to improve the drainage system, if 5 wind turbines are given planning permission and built locally they will provide all our electrical power for our community Council area.

- none
- none
- none
- Provision of flood wardens
- none
- Our community council has supported farmers wishing to diversify into renewable energy; we have also supported appropriate housebuilding so young people can stay in the area.
- none
- Contacted enviromental Agencies to regulate overflow of water from Lake Vyrnwy and management of fallen trees in rivers.
- Not much
- we are considering contracting a person or group to help with general maintenance to the community, to prevent further degradation of road networks, for example sweeping out drainage runs in roads, to enable severe flooding to be managed more successfully, hopefully !
- There has been an increase in the use of solar panels and better insulation of homes. However the government's change to the tariff for solar panels has halted this development..
- An assessment was carried out and no immanent threat was found due to the hight above sea level of the community.
- none ?
- the local authority are encouraging greater initiatives in recycling of waste, encouraging travelling in an eco friendly way
- people are recycling more.
- eyaaaaaaaaaaaaaaaaaaaaaa nraythosher
- At the moment this has not caused severe problems but is being discussed in council.
- Flood warning system in place is all that I know of.
- As far as I know only recycling
- New drainage and flooding protection
- Little. Financial shortage is one of the main limits on community action.
- None
- None - we tend to rely entirely on local authority and emergency services.
- new bridge by house is higher & wider. / Road- nothing
- Nil
- none
- None
- water barriers given to premises that are vulnerable to flooding.
- Gwent leveld drainage board actively manage this risk
- none, except through example, encouragement and community magazine
- I am not aware of any
- bought sand bags for flooding.
- Complaceny
- none
- extra drainage and sea defences to stop erosion

- None that I know of.
- river bfortifiedanks
- Non
- Dim
- Cloddiau llanw / - Torri coed amlwg simsan
- Ymchil ac ymarfer da i ddelio gyda effeithiau newid yn yr hinsawdd - cynlluniau datblygu lleol i gymryd llifogydd yn ystyriaeth wrth caniatau adeiladau - gwell trafnidiaeth nad yw'n dibynnu ar geir (cerdded, seiclo ac ati)
- Dim llawer hyd yn hyn
- Cefnogi adeiladu Pwerdai Niwclear !!!, ac Pwer Dwr Adnewyddol.
- Dim
- Trio a cyd weithio ar cyngor sir
- Awdurdod lleol yn ceisio gydar Asiantaeth yr Amgylchedd i gael cynllun effeithiol
- Dim
- Dim
- Cyngor Cymuned - Dim
- dim lot eto

C.4 What barriers, if any, do you feel there are to effectively responding to climate change in your community?

- There would be a lack of available funds
- Lack of money to put measures in place.
- Effect not felt so no obvious drivers to precipitate change in behaviour. Location of building permissions for new housing has had a measurable effect on incresed water run-off, this is due to planning not climate.
- more funding needs to be available for e.g. using solar , hydro or wind resources
- Lack of knowledge and lack of resources
- Lack of facilities and finance to have equipment on hand or nearby to react to overcome problems. An official organized support group to meet any emergency. Apart from the police who will be stretched due to reduction in numbers.
- People do not seem to understand that their actions have an impact and that there needs to be behavioural changes as well as investment in technology. They will make changes that will save them money, such as installing home insulation and PV panels, but they still feel they are able to continue using their cars with impunity. The economy and the ability to make a profit in the short term still takes priority over everything else, even though climate change is likely to cost us all more in the long term.
- Apathy and denial,' it won't affect me, i shan't be here'
- Lack of awareness
- funds
- Cost; attitude; mind set; lack of clear policy and leadership; no world wide concerted action plan;
- Financial

- Reaching the time-poor - young working families who are difficult to engage but can be very active once they get the message / / Small amounts of resources can make a big difference to a project delivered by volunteers. It would be great to have an officer at town council level to help get the message out about what actions people can take themselves / / Make sure the national messages are consistent and delivered at county council level. Local procurement - understood nationally, but ignored by county councils
- The high economic cost of sea defences and drainage place this matter below other priorities for spending whilst current measures are holding good.
- See answer to 12
- we have eco dyfi that are helping
- people do not believe there is such a thing
- Galvanising community engagement in future -based scenarios, taking action now to prevent/mitigate and adapt for the future
- dont understand the question
- Deliberate misinformation by "deniers" with vested interests in the status quo. / Personal selfishness and consumerism.
- Limited grant funing. / Welsh Government project " Ynni'r Fro" appears to be selective, and channeled to unitary authority assets and not to the community in general. Unitary authorities appear to be remote from te communities in general. / Grant funding (when available) processes too protracted, can be beurocratic. Seems a lot of administration and too many audits following implementation.
- The perceived inability of individuals to have any significant impact in the face of other large industrial nations not taking any action.
- Cost of implementation
- No leadership from international governments
- Public apathy.
- n0ne
- Culture is probably the major barrier, but also selfishness and respect follow close behind.
- A state of apathy! Some believe and others don't. Cutting back on the use of carbon sources in this country and the financial effect it has on our population pales into insignificance when compared with China's continuing and increasing use of coal fired power ststaions.
- People are not convinced that there is climate change, we may just be at the end or beginning of another Ice Age. We are merely pawns in the game.
- N/A
- Define probabilities of change
- We do not have the finance, knowledge, experience or power to make decisions.
- over development by builders egged on by WAG and cardiff Council LDP
- Poor communication and lack of information regarding responsibilities for dealing with emergencies.
- Awareness
- financial
- A constant drive for expansion without proper back up facilities.
- Size and location.

- None education on the over use of fossil fuels, and natural alternative energy sources like wind, solar and water.
- Lack of interest and lack of any specific suggestions. People still want to use their cars. Personally I use the buses more as I have a bus pass
- Lack of resource, knowledge and responsibility
- Not much sense of urgency. Lack of financial incentive to go for renewables. General feeling of powerlessness. Ignorance.
- I believe that climate change will be very slow and people and communities will respond in small steps as appropriate. For example if I fail to grow French beans two or three years running because of cold or wet as happened last season I will stop trying.
- making evidecne rleeant to a diverse range f communities and land-use types
- I am unaware of such a discussion.
- Variable knowledge is the issues and causes / Human denial / Feeling that Community's contribution will have little effect overskk /
- It's a small rural area with a small population; the community council budget is very small; it's difficult to disentangle which layer of government is responsible for what, and too easy to think that someone else should be doing it
- People Apathy
- The estuary needs dredging as dothey in other areas. I think it is lack of this that causes flooding as the estuary's are always full these days. There was not the flooding when they were clear. I blaim lack of management but it all comes down to cost.
- see above
- / Dislike of wind turbins
- Lack of community organisation
- There is no basis for community action to occur - there is no natural village or community centre - we are made up fo several scattered settlements
- None at all
- need for for consultation with local people and local groups and dissemination of information, needs to be considered / as to date not many people are aware of the issues until it is too late
- danger of over proliferatiion of wind turbines / lack of imminent problems
- As far as I am aware we have no preparations directly in response to climate change.
- It seems too big a problem for a small community like ours
- cost
- Money for large changes / Individuals resisting change
- There has been no interactions between the Community and the Local Authority - we do not know what the local Authority plans are. / The Goivernment and Gov't agencies are reluctant to take any responsibility for improving sea defences
- Ignorance
- lack of commitment as poor rural area - if you have resources and money it is enabler whilst if you are struggling you have all the barriers in place even if yiou want to try

- The fact that most people don't know what to believe of the media and political hype, and in the fact that the only solutions politicians have come up with are vastly expensive for us all, and there quite frankly more important priorities for us. History has shown that we can respond to threats such as rising sea levels since in the last 150 years they have risen round the UK by around 12". East Anglia and Holland have not disappeared beneath the waves. Bangladesh has not disappeared either since the Ganges delta deposits more silt to compensate. The majority of politicians and the general population may consider that we are largely helpless, but most engineers know that pretty challenging problems can be solved, much more cheaply than we are doing at present. Some of them will be solved for us by the earth/global environment.
- Seems to be little concern that it is an issue.
- The "someone else's responsibility" attitude of many people
- Costs to individuals. Ignorance, apathy and resistance to change among most, including the farming community e.g. not using ways of reducing soil erosion.
- Government constantly putting back the date on which they will begin to act to improve flood defences
- Consequences do not appear at present to be severe enough to generate a response
- Public appathy
- Current level of general public awareness
- Lack of urgency / Lack of government (National/Local) leadership / Apathy / Finance /
- Communication - reaching people effectively is difficult. A feeling that whatever we do will have little impact e.g. compared with what China could do.
- lack of community cohesion
- The influence of Community Councils and their local electorate on the Planning Process is not strong enough.
- Lack of knowledge and understanding are the central barriers. There is little, if any, scientific knowledge and understanding among local county, town and community councillors, which means that climate change is not recognised for the threat that it is to the community. This also leads to a chronic lack of coordinated thinking with respect to policies designed to rectify problems that are ultimately caused by climate change.
- Many people do not recognise the impacts or think beyond their lifetime. It is low on the agenda for local public bodies. Dwindling finances are targeted on the here and now
- People feel that they are asked to undertake actions which may be quite inconvenient to them, and/or detrimental to the community. EG when did we decide that every street in Britain should have three different wheelie-bins lined up outside every house - that damages the enviornmental beauty of Britain, especially our urban streetscape. And yet, being British, we do as we are asked. And then China opens another power station or African minimg waste is dumped into the oceans, more that negating the little we acheive by recycling our rubbish.
- Fundamental changes needed to Planning Policies e.g. LDP Housing not relating to local issues or need
- Planning / Recycling
- LACK OF INFORMATION AND EDUCATION IN GENERAL
- The main barriers are in the perception that it is man made and/or that man can influence it. Man can and should minimise his effect on the world around him, but cosmetic changes will achieve nothing.
- Very little
- apathy
- None

- Community belief systems including denial that man made climate change is taking place.
- apathy from the majority of people who expect others to sort their problems
- lack of clear, localised information dissemination with defined resource (fiscal, project orientated) management
- Other more pressing issues affecting people lives
- ignorance and lack of knowledge, and lack of input from local authority. A lot of people also feel that there is little that can be done in a small country when you look at the pollution in larger countries such as China.
- Lack of activity centrally
- Not accepting that there is climate change
- The landscape
- apathy
- Cost and apathy
- A relief channel to take excess water from the river
- appethy. lack of information, lack of effective leadership
- There does not seem to be any strong voice informing of likely outcomes in the future. The biggest barrier is ignorance and lack of information.
- There is insufficient debate and awareness of the issue. Government at all levels should be more active, and at the lowest level, community councils should be providing more leadership.
- educate peopel.
- I don't believe that we should be
- capital needed to instigate projects such as aqua energy
- Need for people with time and energy to organise effective response and overcome inertia. Much of local housing stock is difficult to adapt for energy saving (traditional stone built houses). Distance from services and employment leads to reliance on cars.
- People's opinion on climate change
- I don't know
- Individual responses ie it wnt affect me so why should I bother
- Not enough information to households , apathy within alot of local residents, particularly amongst the most elderly. I don't think they realise how fast climate change is taking place.
- None
- will, money, influence of consumerism and selfishness of international interests and global companies
- The apparent lack of urgent action by the International community, growth of industrialisation in the far east, the failure of the USA to keep to the Kyoto agreement.
- Vested commercial interests, eg oil industry. Political reluctance to do what is necessary (on a global scale). Denial of climate change. Apathy.
- Entrenched attitudes to own behaviour.

- the buiding of large numbers of houses near the community, without planning road infrastructure and relying on existing road/rail infrastructure and community services. If 45,000 people move into the city, surely a new hospital etc. will need to be built? This will obviously have a huge impact on the environment. The community is 25 minutes from the city centre and bus services are one every hour. At present, bottlenecks occur on the main roads into the centre. / Building on the remaining greenfield sites around the city will only create more problems with regard to climate change & sustainability.
- There is not funding available to improve the drainage system.
- cost and apathy
- little opportunity apart from recycling which is the responsibility of County Councils
- not sure what we can do?
- limited powers and financial resources of a small community council affecting a very small area of Wales
- There is conflicting scientific evidence. Scientists talk about global warming and we hve had 3 of the coldest winters in decades ???!!!!
- Ignorance
- National Park planners are heavily opposed to renewable energy and extra building plots for affordable housing.
- denial / don't want to change / education /
- belief that it is affected by local communities as opposed to destruction of rain forests in Brazil adn SE Asia and coal burning in China
- / Financial probably.
- There is a lack of connected thinking about the problems; short term solutions are just that.
- Elderly population do not generally consider climate change as a genuine problem.
- Commercial interest
- See the above comment re solar panels. / I also think more people would switch to more efficient vehicles if the infrastructure to support this development (e.g. electric charging points) was in place. A more generous subsidy for electric vehicles would also be helpful. / The Council's arrangements for re-cycling are poor. Collection methods are poor and the Council's arrangements for service centres for re-cycling are abysmal.
- Funds
- getting everyone to understand exactly why it is happening, what is the best way to deal with the problem and getting everyone to play their part
- A sense of I am alright jack.Which seems to be the way things are going in all communities at the moment.
- epngatisoeaewtiv
- Money
- Understanding what issues we need to address
- Lack of knowledge and trust in the information
- Lack of money and attitudes.
- as above. A shortage of financial resources is the main barrier to change.
- Locally, climate change is unlikely to have much harmful effect and may even have benign effects in the next few years. The biggest barrier to action is therefore persuading people to take action for the benefit of the world as a whole. Additionally there is the feeling that the actions of a small number of people in a small country are unlikely to have any effect.

- Getting individuals to accept that they can make a difference to something that is global in scale.
- cost, community council has not much money. We would look to the County Council. /
- not enough people using public transport.
- Cash
- Cost.
- Lack of investment and ineffectual decision making
- Lack of finance and powers to implement change
- Financial, lack of awareness and general apathy
- Complacency
- / Apathy
- too small
- geography and cost
- As a very small community there is little we can do beyond as individuals improving our efficiency in resource use.
- Sometimes it is difficult to predict the action that will happen and therefore difficult to plan and set timescales
- apathy
- People tend to talk a lot but no action
- Mae'n gymuned wledig ar wasgar. Dyw hi ddim yn bosib felly i adeiladu amddiffynfeydd yn erbyn llifogydd i warchod stryd o dai, er enghraifft. Roedd cynlluniau i sefydlu prosiect hydro-electrig cymunedol ond ni chafwyd caniatad gan CADW i ddatblygu hyn.
- Diffyg ymwybyddiaeth / - Syndrom pen yn y tywod
- Dim arian - llawer o siarad am bolisiau gwyrdd ond dim gweithredu o ddifri - prinder arweiniad gan Lywodraeth Cymru a llywodraeth Prydain
- Diffyg gwybodaeth
- Rhai yn dal ddim wedi deall gwerth Pwer Niwclear.
- Prinder o adnoddau i ddatrus yr un hen broblemau
- Diffyg adnoddau
- Diffyg ymwybyddiaeth
- Difaterwch llywodraeth Ewrop, Llundain, Caerdydd, Cyngor Gwynedd a'r Cyngor Cymuned
- Dim
- Argyhoeddi pobl o'i bwysigrwydd. / Argyhoeddi Awdurdodau lleol bod rhaid symud NAWR / Diffyg ymateb Llywodraeth ganolog
- Mae negeseuon CYMYSG gan wyddonwyr yn peri cryn amheuaeth ai ydi'r GWIR yn cael ei ddatgan. cofier bod pob darganfyddiad yn gywir nes y ceir y nesaf ym myd gwyddoniaeth.
- Gwasgfa ariannol. / Blaenoriaeth eraill. / Diffyg neges glir . / Gwrthwynebiad yn erbyn melinau gwynt a datblygiadau gwyrdd.
- ran fwyaf o bobl dim yn meddwl mae mynd di ddigwydd

C.5 Examples of good practice in addressing climate change or sustainability

- Local farmers moving away from artificial fertilisers, rivers kept free of debris to enable swift water flow.
- Solar panels becoming widely used
- Rubbish collection and correct disposal of or recycling
- The Transition Town movement is aimed at working at community level to reduce carbon emissions, address the problem of "peak oil" and to build in resilience at local community level.
- The acceptance of alternative power generation - even the primary school has solar panels and a wind turbine installed.
- Cittaslow / Transition Towns / North Wales Energy Advice Centre / Wrap / Keep Wales Tidy / Action for Market Towns
- Installation of wood fired boilers and PVA solar panels to reduce dependency on fossil fuels. / County Council employing better refuse disposal and recycling practices to save on land fill and the consequential methane generation.
- eco dyfi
- Examples in other communities or recycling, community composting, hydro power schemes, wind turbines, co-operatives
- Mitigation projects e.g. bryn gwalia estate energy efficiency and behaviour change also low carbon cilcain
- Projects mentioned above under Item 12 above. Introduction of solar panels above to reduce reliance on electricity power supplies. This has proved most effective. Further project being implemented.
-
- recycling of waste.
- The recycling impetus brought about by many councils and their residents and schools.
- Green Valley project in Llangattock
- Various, as can be found by the most elementary of searches on the internet etc.
- SMALL HYDRO POWER SCHEME ON THE TAFF TRAIL PUSHED BY OUR COUNTY COUNCILLOR
- Development of hydro power
- The Community Council has bought local woodland which it manages with volunteers to save it from developers. The City Council is trying to meet targets on waste disposal. There are agencies who promote using local waterfalls, weirs etc to generate power and the City and Community Councils are actively promoting such use on the Taff. However motivation from officers seems to be lacking and funding is always a problem even though the power would contribute to local ecomony
- Allotments, buying local produce, fitting PV and solar panels, wind farms etc,
- Recycling services provided by the Vale which are excellant
- Talybont hydro scheme. Would like to copy that in Llanfrynach Community Council area.
- some take-up of solar and photovoltaics
- Energy groups - e.g. Llangattock /
- Locals are being asked their opinions. As they live here they are more likely to know alot of the answers. Consultations are taking this into account.
- RECYCLING

- only small services provided by the unitary authority
- recycling facilitees / green energy projects
- The Riverside Market Garden based in St Hilary grows and produces Veg Boxes which it then sells to the local communities in the Vale. As far as I am aware they have a volunteer workforce.
- Transition movement - / various company initiatives when they extended addressed issues they could through incorporation in design and build to reduce long term dependancy - / our local community rebuild of a sports facility had from the start a commitment to go in the same direction to enable use of existing resource to provide as much infrastructure to support ambition to address climate change- / Lamas - a new build in open counrty side to live with small carbon foot print - great if you can achive though i should ythink not for the faint hearted. /
- Only bad examples such as windmills and fields full of solar panels all at vast expense.
- An effective recycling programme run by Monmouthshire County Council and supported by most of the local community
- Green Valleys Project, Llangattock Green Valleys
- Am aware of one community in mid Wales who developed a hydro-electric scheme to deliver power in a sustainable way
- See Q.12
- Cittaslow
- Personally, I have a folder full of examples of innovative experiments at the community level to deal with the effects of climate change and to reduce the negative environmental impact of the community. They range from experiments in recycling, water managements and microgeneration to prevention of flooding and use of sustainable building materials.
- Improving the flow of the River Gele. Raising the ground level.
- ENERGY EFFICIENCY MEASURES ON A COMMUNITY SCALE PLUS MORE RECOGNOTION IN EDUCATION AT SCHOO;S THAT ADDRESS CLIMATE CHANGE
- Recycling waste, particularly plastics and card/paper.
- Press reports, etc.
- Taking advantage of Wind farms, solar panels fro FIT and pellet boilers
- Recycling / Smokeless fuel / Solar energy
- We have a project at an early stage of development to erect a wind turbine and use the revenue for community benefit and further sustainable development projects.
- recycling. low energy street lamps.
- Villages identified in OVW Annual Conference using hydro power
- Neighbouring villages have active and successful groups (Llangattock Green Valleys,, Talybont Energy etc). The Green Valleys CIC supports local groups in the Brecon Beacons National Park.
- Recycling. Solar Panels on some properties. use of resources/ reusing disgarded items at Community re-cycling tips , Composting waste & buying compost from community tips. Street lighting times reduced. Buying from charity shops instead of buying new. Re use of books at very reasonable costs.
- as in the OVW training programme.
- Denbighshire County Council's recycling scheme, if It's as good as we are led to

believe.

- Dramatic improvements in recycling, composting vegetable waste, cycle routes, encouraging people to insulate their buildings to save energy. Encouraging people to install solar panels.
- excellent household waste recycling
- Recycling
- Nearly everything which happens in DENMARK. / / Permitted Development rights for renewable energy in REP OF IRELAND
- Installation of solar panels to run the Village Hall
- installation of solar and hot water panels for domestic usage
- Improved recycling (though this is not yet available where I live)
- recent open house at a village hall that has implemented energy saving solutions
- Llangatock green valleys scheme
- recycling waste instead of sending it to landfill
- Attempts to develop sustainability
- Aware of some initiatives such as Transition Chepstow but not in any detail.
- mini hydro electric plant in village in the Beacons. /
- New village hall is eco friendly (heat pump heating and highly insulated)
- Other communities using hydro power, composting schemes, slow food, recycling and co-operatives
- ways of promoting and developing community energy schemes
- use of solar panels on many houses and the village hall
- Allotments and food growing, recycling

- Gwahanol drefniadau ailgylchu lleol
- Yn anffodus mae grwpiau fel transition yn cael eu gweld fel pobl o'r tu allan a dyn nhw ddim yn cario'r cymuned gyda nhw. Weithiau mae fath hyn o weithredu yn gwneud mwy o ddrwg gan fod pobl yn cymryd yn erbyn y neges oherwydd ymddygiad grwpiau fel hyn
- Mwy o orsafeydd Niwclear.
- Cynllun llifogydd lleol
- Mae'r cyngor tref yn hybu plannu coed a gosod paneli PV trydan a phaneli twymo dwr. / / Y mae'r cyngor ei hun eisoes yn rhan o gynllun plannu coed yn y dre ac wedi gosod paneli PV trydan at y swyddfa ac yn y broses o osod rhai ar adeiladau'r parc.